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DISEASES CAUSED BY BACTERIA AND FUNGI

I. POUNDEN, W. D. (1952). **Variations in the resistance of milk to the activity of** *Streptococcus agalactiae*.—*Amer. J. vet. Res.* 13, 491-499. 1790

II. POUNDEN, W. D., HIBBS, J. W. & EDGINGTON, B. H. (1952). **The activity of** *Streptococcus agalactiae* **in milk possibly influenced by the ration.**—*Ibid.* 486-490. 1791

I. Using quarter milk samples drawn weekly from 22 healthy dairy cows (17 Holstein-Friesian, 5 Guernsey-Jersey) for one year, an attempt was made to correlate resistance to acid production by cultures of *Str. agalactiae* added to the samples with (a) diet, (b) age and breed, (c) level of milk production.

II. From a group of 8 cows fed a diet of good alfalfa hay, silage, and a moderate quantity of grain and from a similar group given poor timothy hay and more grain, quarter milk samples were collected weekly, these being inoculated with *Str. agalactiae* and tested quantitatively for acid production. In the latter group the acid production was 37·8% greater than in the former.—C. C. BANNATYNE.

HOLMAN, H. H., PATTISON, I. H. & GORDON, W. S. (1952). **Studies on experimental streptococcal mastitis. VII. Immunological studies in goats.**—*J. comp. Path.* 62, 196-213. [Abst. from authors' summary.] 1792

A passive protection test in mice and a slide agglutination test were used to follow the production of streptococcal antibody in goats inoculated with *Str. agalactiae*, strain S.13.

Antibodies were formed to living streptococci introduced into one side of the udder. When the blood serum agglutination titre was as high as 1:8, agglutinins could usually be detected in the milk whey from both sides of the udder.

Four i/p inoculations of living broth culture caused production of antibody, the titre produced and persistence (up to at least 8 months) appearing to be related to the amount of culture inoculated; in the case of two goats, antibody was present over a period of 2½ years.

Serial inoculations of living culture produced a high level of resistance to an intramammary test dose of the same strain, as measured by milk yield, neutrophile counts in milk and counts of streptococci in milk.

In a small test there was resistance to an intramammary test dose given 6–8 months after an infecting intramammary dose inoculated into the other side of the udder.

There was a close relationship between sudden rises in streptococcal count in milk, rises in body temp. and in neutrophile count in milk, and falls in milk yield and in the blood leucocyte count, indicating a period of crisis in the disease. Each crisis began as a sudden multiplication of streptococci within the udder.

There was individual idiosyncrasy in the reaction of goats to an intramammary inoculation of living streptococci.

VERGE, J., GORET, P., JOUBERT, L., GAUCHY, L. & FUERXER, M. (1952). La fièvre charbonneuse du vison. [**Anthrax in mink.**]—*Bull. Acad. nat. Méd.* 136, 53-58. 1793

An outbreak of anthrax in mink on a farm in Eastern France during which about 600 had died was stopped by 2 daily doses of 25,000–50,000 I.U. of penicillin per infected animal for several days.—E.G.

RENAUX, E. (1952). Culture de *Bacillus anthracis* en milieu calcique et en milieu oxalaté. [**Cultivation of** *B. anthracis* **on media containing calcium or oxalate.**]—*Ann. Inst. Pasteur.* 83, 38-45. 1794

NOTE.—*The* V.B. *references given in square brackets now refer to abstract numbers and not to page numbers.*

Calcium proved toxic to cultures of 2 strains of *B. anthracis* in agar; neutral sodium oxalate acted as a growth factor.

—G. P. MARSHALL.

KOZIĆ, L. (1951). **[TB. in cattle in Yugoslavia.]** —*Vet. Glasnik.* **5,** 430-439. [In Serbian.] **1795**

In 17 co-operative cattle farms the percentage of animals reacting to tuberculin was as high as 30% among housed animals and in the oldest establishments. Considerably lower figures were encountered on newer farms and where cattle were kept at pasture.—I. MARTINI.

HASLER, E. (1952). Zur Frage der Beeinflussung der intrakutanen Tuberkulinprobe des Rindes durch wiederholte Impfungen. **[Effect of repeated inoculations on the tuberculin skin test in cattle.]**—*Mh. prakt. Tierheilk.* **4,** 571-576. **1796**

After 8 repeated i/d tests of tuberculous cattle at 3-day intervals the increase in the thickness of the skin caused by the tuberculin dropped from 9·5 mm. (av. of 49 cases) to an average of 2·5 mm. In occasional cases there was an initial increase in sensitivity. Accompanying local symptoms (*e.g.* pain) were more persistent. A 4-week rest restored original sensitivity.—J. E. SMITH.

BAREI, S. & NARDELLI, L. (1952). La tubercolina in medicina veterinaria con particolare riguardo alla prova intradermica nei bovini. I, II, III & IV. **[The intradermal tuberculin test in cattle. I, II, III & IV.]**—*Clin. vet., Milano.* **75,** 129-147, 161-170, 197-213 & 229-241. **1797**

I-IV. A comprehensive and up-to-date review of the development of tuberculin and its derivatives in vet. medicine, particularly the use of the i/d test in cattle, concluded by the authors' suggestions as to the mode of application and limitations of value in practice. (359 references.)—G. P. MARSHALL.

KERRUISH, D. W. (1953). **Some observations on the interpretation of the single intradermal comparative tuberculin test.**—*Vet. Rec.* **65,** 67-70. **1798**

In order to avoid subsequent "breakdowns" K. advocated a more stringent interpretation of the first tests of infected herds.

—E. A. GIBSON.

NABHOLZ, A. & BEGLINGER, F. (1953). Erfahrungen bei der Verwendung des syrischen Goldhamsters für die Tuberkulosediagnostik. **[Use of the hamster in the diagnosis of TB.]** —*Schweiz. Arch. Tierheilk.* **95,** 28-32. [English, French and Italian summaries.] **1799**

In tests on golden hamsters controlled by parallel tests on g. pigs the former were found to be unsuitable for the diagnosis of TB.—R.M.

STONEBRINK. (1952). Recherches sur la culture du Mycobacterium tuberculosis var. bovis. **[Cultivation of *Mycobacterium tuberculosis* var. *bovis.*]**—*Bull. Off. int. Epiz. II.* **37,** 662-677. **1800**

S. discussed the cultivation of bovine type tubercle bacilli; he preferred a medium containing pyruvic acid. He gave details of a method for measuring quantitatively the sensitivity of and rapidity of growth on various media.

—D. LUKE.

CANTONI, O. (1952). Sulla frequenza della tubercolosi nel gatto. (Diagnosi sperimentali mediante l'esotubercolina). **[The tuberculin test in cats.]**—*Profilassi.* **25,** 273-279. **1801**

Of 49 cats suspected to be tuberculous, and given an i/m inj. of "Esotuberculin" Finzi, 39 yielded positive reactions. P.M. findings confirmed the results of the allergic tests.—I. MARTINI.

SYMMERS, W. ST. C., THOMSON, A. P. D. & ILAND, C. N. (1953). **Observations on tuberculosis in the ferret (*Mustela furo* L.)**—*J. comp. Path.* **63,** 20-30. **1802**

The authors described naturally contracted bovine-type *Mycobacterium tuberculosis* infection in a ferret, and discussed the disease in that host. A ferret injected i/m with the organism isolated from this case developed enlargements of the liver and the spleen, the microscopic appearances of which were described. Attention was drawn to the absence of gross lesions in some tuberculous ferrets.—A.S.

TOLDERLUND, K. (1952). **Preliminary report of laboratory investigations on the effect of light on BCG vaccine.**—*Acta path. mycrobiol. scand.* Suppl. No. 93. pp. 299-307. [In English. Author's summary modified.] **1803**

In two preliminary studies on exposure of B.C.G. vaccine to light, the enormous traumatic effect of sunlight and also the strong destructive effect of daylight were shown. Because of these findings, the technique for preparing B.C.G. vaccine was modified in Jan. 1952 so as to avoid exposure of the vaccine to daylight and to render the influence of other external factors on the vaccine as uniform as possible from batch to batch. The results obtained show that the content of viable bacilli in successive batches of vaccine since this time have varied but little.

When samples of each batch of vaccine were exposed to daylight behind double glass windows in the laboratory, the content of viable organisms was found to decrease with the duration of exposure and the intensity of the light. No effect could, however, be shown by exposure to electric light. These findings suggest that the great variations in the number of viable bacilli in Danish B.C.G. vaccines prepared prior to Jan. 1952 may have been due to exposure to light in the lab. during preparation and testing.

HALL, I. M. & WYLIE, J. A. H. (1952). **Multiple puncture with B.C.G. and vole bacillus vaccine. A comparative trial. [Human.]**—*Lancet.* **263,** 608-610. **1804**

The immediate effects of vaccination by multiple puncture with vole bacillus and B.C.G. were compared. The rates of "conversion" [the occurrence of a positive reaction in a vaccinated individual, previously negative to the tuberculin test, this being proof that vaccination has "taken"] to 100 units O.T. 4 weeks after vaccination were 95–100%. The local reaction following vaccination with the strength of suspension used in each case was slightly greater and more persistent with vole baccilus than with B.C.G. With both antigens there was less initial discomfort and fewer undesirable sequelae than occur with i/d inj. The administration of B.C.G. by multiple puncture appears in a distinctly advantageous light compared with the i/d route.

After 7 weeks the rate of conversion to 10 units O.T. was appreciably higher with vole bacillus than with B.C.G.

NÈGRE, L. (1952). Résistance antituberculeuse sans allergie conférée aux animaux de laboratoire par l'antigène méthylique. Étude de sa durée et de l'action préventive de ce produit associée à celle du BCG. **[Immunity without allergy following vaccination with a methylated tuberculous antigen.]** — *Ann. Inst. Pasteur.* **83,** 429-436. **1805**

Methyl alcohol extracts of tubercle bacilli, injected into g. pigs, rapidly produced a certain degree of immunity which, however, disappeared quickly and did not lead to the development of allergic reactions. After s/c inj. of the antigen resistance lasted more than 2 but less than 4 months. After i/v inj., no immunity could be demonstrated after 2 months. A combination of B.C.G. and the methyl alcohol antigen gave better results than either alone.—A. MAYR-HARTING.

VEISFEILER, J. K. (1949). **[Utilization of mutation of the tubercle bacillus in accordance with Michurin's discoveries.]** — *Probl. Tuberc., Moscow.* No. 6. pp. 3-14. [In Russian.] **1806**

The author emphasized the capacity of the tubercle bacillus to mutate, the value of this character in the production of improved vaccines, the need to find chemotherapeutic preparations to which the bacillus would not become adapted and the need to solve problems of TB. epidemiology and diagnosis.—F.A.A.

I. GOTINK, W. M. & VAN ULSEN, F. W. (1953). Skin lesions bij runderen. **[So-called "skin TB." in cattle.]**—*Tijdschr. Diergeneesk.* **78,** 103-115. [English, French and German summaries.] **1807**

II. FRIELING, D. (1953). Aspecifieke reacties, veroorzaakt door skinlesions. **[Non-specific reactions caused by so-called "skin lesions".]** —*Ibid.* 116-121. [English, French and German summaries.] **1808**

I. From a lesion of so-called "skin TB." in a bovine animal an acid-fast rod was cultured on Loewenstein's medium to which a skin extract had been added. A local swelling was induced in a healthy cow by the i/d inj. of this culture.

II. The swelling produced by the i/d tuberculin test in cases of so-called "skin TB." in cattle is more compact and less painful than in TB. The majority of cases occur in cattle 4 to 5 years old.—C. A. VAN DORSSEN.

KUSLYNS, A. & BIRN, K. (1953). Zur Frage der säurefesten Saprophyten in den Plazenten von abortierenden Rindern. **[Acid-fast bacilli from the placenta of an aborting cow.]**— —*Schweiz. Arch. Tierheilk.* **95,** 123-125. [English, French and Italian summaries.] **1809**

Acid-fast bacilli were isolated from the placenta of a cow which aborted at seven months. They grew on Löwenstein medium (with and without glycerin), in glycerin broth, Dubos medium, and on simple and blood agar, but not on gelatin.

Microscopic examination of the Dubos culture revealed "cord formation" said to be typical of virulent tubercle bacilli.

Cultures were not pathogenic for g. pigs, mice, a rabbit or a fowl. Inoculated animals did not react to human or avian types of tuberculin.—R.M.

HOLE, N. H. (1952). **Complement-fixation tests and the mycobacteria infections.**— *Proc. R. Soc. Med.* **45,** 481-482. **1810**

H. gave a preliminary report on the use of a c.f. test in the diagnosis of Johne's disease. He described the technique used, and discussed the cross reactions given with avian and bovine types of TB.—E. A. GIBSON.

BOYER, F., CAUCHY, L. & VERGE, J. (1951). La sulfonémie chez la vache. **[Sulphone levels in the blood of cows treated for Johne's disease.]**—*C.R. Soc. Biol., Paris.* **145,** 1001-1003. **1811**

A clin. note on the treatment of a cow with 4:4 diamino-diphenyl sulphone. By repeated small doses it was possible to maintain a steady conc. of the drug in the blood—No results were given.—R. MARSHALL.

MORSE, E. V., ROBERTSTAD, G. W., WIPF, L. & GLATTLI, H. R. (1952). **A study of the pathogenicity of *Corynebacterium pyogenes* for laboratory white mice, hamsters, and rabbits.**—*Cornell Vet.* **42,** 368-379. [Abst. from authors' summary.] **1812**

The i/v, i/p, or s/c inoculation of *C. pyogenes* cultures produced death or chronic infection in a considerable proportion of white mice. I/v inj. resulted in a greater proportion of infections in mice, but i/p inj. produced a greater proportion of bacteriologically positive organs. Localized abscesses were produced at the site of inj. and metastasis was not uncommon following s/c inoculation. Generalized infections produced by any of these routes consistently involved the kidneys. Bovine and porcine strains appeared to be more pathogenic for mice than ovine strains, those isolated from cases of pneumonia being more pathogenic for mice than those from mastitis. Hamsters were apparently resistant, but s/c inoculations of cultures produced localized abscesses; 11 of the 24 strains tested failed to produce infection following i/p inoculation. Twelve of 13 strains tested i/v in rabbits were pathogenic.

HILLEBRAND, F. K. M. (1953). **Whale finger and seal finger: their relation to erysipeloid.** —*Lancet.* **264,** 680-681. [Author's summary modified.] **1813**

Observations on finger infections in men engaged in whaling and sealing in the Southern Hemisphere were described. The clinical diagnosis in a total of 66 cases was summarized as cellulitis (41), erysipeloid (11), subcutaneous abscess (5), paronychia (4), pulp abscess (1), and clinically not classified (4).

Bacteriologically an infection of mixed origin, but including *Erysipelothrix rhusiopathiae,* is probable.

In whalers the usual cause of both erysipeloid and cellulitis is superficial scratches by wire ropes. In sealers small cuts are commonly responsible. The terms "whale finger" and "seal finger" show that these infections are recognised as occupational by those engaged in the work.

EISSNER, G. (1951). Ist die Bewertung von Rotlauf-Adsorbat-Impfstoffen in der staatlichen Prüfung von der Virulenz des Prüfungsstammes abhängig? **[Importance of the virulence of the test organisms in evaluation of swine erysipelas vaccine.]**—*Inaug. Diss., Giessen.* pp. 32. **1814**

The evaluation of swine erysipelas vaccines was found to be independent of the virulence of the test organisms.—H. BEHRENS.

GRAY, M. L. & MOORE, G. R. (1953). **Aureomycin in the treatment of ovine and bovine listeriosis, with notes on survival.**—*N. Amer. Vet.* **34,** 99-105. **1815**

Treatment of *Erysipelothrix* (*Listeria*) *monocytogenes* infection with aureomycin appeared to be of some value in cattle, but *ante-mortem* diagnosis is so difficult that results are difficult to assess. In sheep, the disease is so acute that treatment is unlikely to be of value.—G. B. S. HEATH.

YASIN, S. A. (1952). Le barbone au Pakistan. **[Haemorrhagic septicaemia in Pakistan.]**—*Bull. Off. int. Epiz.* **38,** May. pp. 233-239. **1816**

An account of haemorrhagic septicaemia in Pakistan. Vaccines prepared from organisms grown on gelatin are giving encouraging results. —D. LUKE.

VAYSSE, J. & ZOTTNER, G. (1952). Les pasteurelloses au Maroc. Méthodes d'immunisation. **[Pasteurellosis in domestic animals in Morocco and methods of immunization.]**—*Bull. Off. int. Epiz.* **38,** May. pp. 219-225. [English summary.] **1817**

Pasteurellosis has been reduced in Morocco by drainage of marshy areas and by use of a formol-vaccine prepared from mixed strains of *Past. septica.* The use of attenuated cultures proved unsatisfactory.—A. SEAMAN.

ZUYDAM, D. M. (1952). Penicilline als therapeuticum bij vogelcholera. **[Penicillin treatment of fowl cholera.]**—*Tijdschr. Diergeneesk.* **77,** 256-257. [English summary.] **1818**

Pasteurella multocida infection, in 3 outbreaks affecting 400 and 300 fowls and 27 geese respectively, was successfully treated by i/m inj. of penicillin. The outbreak in geese

and one of those in fowls were traced to wild geese.—A. J. Ultée, Jr.

Preston, N. W. & Maitland, H. B. (1952). **The influence of temperature on the motility of** *Pasteurella pseudotuberculosis*.—*J. gen. Microbiol.* **7**, 117-128. 1819

Past. pseudotuberculosis grown at 22°C. develop both flagella and H antigen. These were not produced at 37°C., the probability being that metabolic changes occur in the cell, rather than that mutants arise.—A. Seaman.

Mundt, W. (1953). Ursachen des ansteckenden Hühnerschnupfens und seine Behandlung. [**Cause and treatment of fowl coryza.**]—*Prakt. Tierarzt.* 3-6. 1820

A fungus of the genus *Penicillium* was isolated from an outbreak of fowl coryza and reproduced the disease in healthy fowls when given intranasally and in the cleft of the palate.—R.M.

Goret, P., Brion, A., Joubert, L., Renault, L., Courtis, B., Jouinot, G. & Clavel, P. (1951). Une entérite à "Proteus" chez le chien et son traitement. [**Enteritis of dogs caused by** *Proteus*.]—*Bull. Soc. Sci. vet., Lyon.* **53**, 164-172. 1821

By the authors' methods of examination, the predominant bacterium of the faecal flora in 15 of 22 dogs without intestinal symptoms was a species of *Proteus*. *Proteus*—commonly *P. rettgeri*—were also isolated from 19 out of 25 dogs with enteritis. It was stated that "binoxol" [composition not given] and an acid extract of the mycelium of *Streptomyces griseus*, both given *per os* [dosage not stated] after sensitivity tests *in vitro*, yielded good results. —B. G. Clarke.

Fey, H. (1949). Die bovine coliforme Mastitis und ihre Behandlung mit Streptomycin. [**Treatment of** *Bact. coli* **mastitis with streptomycin.**]—*Schweiz. Arch. Tierheilk.* **91**, 623-649. 1822

F. discussed forms of mastitis in dairy cows caused by organisms of the *coli-aerogenes* group and reviewed 14 case histories. He recommended 4 mammary infusions spread over 24 hours, each with 1 g. of streptomycin in 100 ml. of sterile physiological saline or distilled water.—E.G.

Buntain, D. & Field, H. I. (1953). **An outbreak of mastitis in cattle due to infection with an organism of the Friedländer (Klebsiella) group.**—*Vet. Rec.* **65**, 91-93. [Authors' summary modified.] 1823

An account of an outbreak of mastitis caused by an organism of the Friedländer group. The disease was of a chronic nature and led to the production of grossly abnormal milk. Of the 38 cows in the milking herd, 29 became infected in one or more quarters. Calves fed on herd milk developed a severe respiratory infection.

Cottew, G. S. & Ryley, J. W. (1952). *Shigella equirulis* **infection in a foal.**—*Aust. vet. J.* **28**, 302-306. [Abst. from authors' summary.] 1824

An account of the isolation of *Bact. viscosum equi* from a foal with multiple abscesses and of the results of inoculation of cultures from the strain into a foal and into lab. animals.

Galton, M. M. (1952). **Salmonellosis in dogs with special reference to the studies in Florida.** —*Auburn Vet.* **8**, 141-146. 1825

A general discussion of studies already reported by Galton *et al.* [*V.B.* **22**, 1261 & **23**, 575-578].

Trüb, C. L. P. & Schneider, P. (1952). Auftreten gehäufter Einzelerkrankungen und Gruppenerkrankungen durch Salmonella panamo und Salmonella-Typen der Paratyphus C-Gruppe im Lande Nordrhein-Westfalen 1950/1951. [**Increased incidence of infection with** *S. panama* **and other salmonella in North Rhine-Westphalia, during 1950/51.**] — *Z. Hyg. InfektKr.* **135**, 121-145. 1826

During 1950 and 1951 287 human cases of *S. panama* infection were confirmed in North Rhine-Westphalia as well as 131 cases of infection with members of the *S. paratyphi C* group (*S. morbificans bovis*, *S. münchen* and *S. virchow*). There were few deaths. Most cases occurred in the warm months. Animal products including pork, minced meat, ice-cream and egg-products were the proven vehicles of infection in some cases, but no attempt was made to discover whether animal infection, rather than contamination of the products by human carriers, was responsible.

S. panama infection can be carried without causing symptoms or agglutinin-production. Illness occurs only in response to some endogenous or exogenous releasing factor, and most cases are isolated.

The cases due to *S. paratyphi C* group infections were regarded as typical food poisonings.—J. E. Smith.

Marthedal, H. E. (1951). Experimentelle, serologiske og kulturelle studier over S. typhimur. [**Experimental, serological and**

cultural studies on *Salmonella typhi-murium*.] —*Nord. Vet.-Med.* **3**, 617-641. [In Danish. English and German summaries.] **1827**

The incidence of *S. typhi-murium* infection in fowls in Denmark has been increasing, while *S. pullorum* and *S. gallinarum* infections have been controlled.

The authors had found that the sera of some fowls with spontaneous *S. typhi-murium* infection give cross agglutination with *S. pullorum* and *S. gallinarum* antigens.

Fowls infected experimentally with *S. typhi-murium* developed agglutinins in fairly high titre in the tube test with *S. gallinarum* antigens.—H. BOYD.

CARRÈRE, L. & ROUX, J. (1952). Obtention *in vivo* des formes L de Salmonella typhimurium. [**Cultivation of L forms of** *S. typhimurium in vivo*.]—*C.R. Acad. Sci. Paris.* **234**, 1647-1649. **1828**

A culture of *S. typhi-murium* enclosed in a glass tube sealed at one end with a plug of 30% agar and with a drop of paraffin at the other, and placed in the peritoneal cavity of a g. pig, produced numerous large bodies. Subcultures on semi-solid medium gave L-colonies. Incubation of the tube *in vitro* showed complete reversal to bacillary forms within 24 hours.—A. MAYR-HARTING.

DIETRICH, G. (1952). Untersuchungen über die Giftgkeit von Salmonella gallinarum für Kaninchen. [**Toxicity of** *S. gallinarum* **culture filtrates for rabbits.**]—*Inaug. Diss., Giessen.* pp. 26. **1829**

8-10 day broth filtrates of *S. gallinarum* produced inappetence, malaise and sometimes death when injected i/v into rabbits; this action was inhibited by serum prepared against whole broth cultures.—J. E. SMITH.

ZYGLER, Z. (1951). Wpływ bodźców nieswoistych na podwyższenie miana zlepnego we krwi bydła zakażonego pałeczką banga. [**Influence of non-specific factors on the increase of the agglutination titre in cattle infected with** *Brucella abortus*.]—*Polsk. Arch. Weteryn.* **1**, 231-256. [In Polish. English and Russian summaries.] **1830**

Z. regarded a reaction at titres of 1:20 in healthy cows, heifers and rabbits as negative. Following an injection of non-specific stimulating agents (milk, "omnadin", homologous blood) the agglutinin titre rose and reached its highest point 96 hours after injection. Animals naturally or artificially infected with *Br. abortus* after an inj. of a non-specific stimulating agent developed an agglutination titre of 1:160 and higher. Z. commented on the conclusions that can be drawn from a positive reaction in cows that have not received a brucella vaccine.—J. R. MITCHELL.

LEVI, M. L. (1952). [**Preliminary observations on the use of ABR (ring test) stained antigen in brucellosis of goats.**]—*Refuah vet.* **9**, 14-16. [In Hebrew. Abst. from English summary p. 36.] **1831**

An account of the use of the "ring test" for *Br. abortus* infection in cows and goats. —E. A. GIBSON.

BENDTSEN, H. (1952). Abortus-Bang-Ringprøven med vitalfarvet antigen. [**The** *Br. abortus* **ring test.**]—*Thesis, Copenhagen.* pp. 95. [English summary.] **1832**

The results obtained with the ring test using antigens stained either with haematoxylin or with tetrazolium, both heated and unheated, were compared with the blood test. Heated tetrazolium-stained antigen was preferred for routine purposes.—C. A. VAN DORSSEN.

ANON. (1952). **Brucellosis—criteria for the administration of the Illinois grade A milk regulation effective January 1, 1955.**—*Timely Topics. Ext. Serv. Agric. Home Econ.* Univ. Ill. VM 267. pp. 2. **1833**

As from Jan. 1955, herds producing "Grade A" milk sold in Illinois must be free from brucellosis as shown by periodic serum agglutination tests and *Br. abortus* "ring tests". —E. A. GIBSON.

MAESTRONE, G. P. (1952). L'associazione dell'acido paraminobenzoico con il cloramfenicolo nella terapia della brucellosi sperimentale del ratto. [**Treatment of experimental brucellosis with chloramphenicol and para aminobenzoic acid.**]—*Arch. vet. Ital.* **3**, 389-418. [English, French, German and Spanish summaries.] **1834**

Of 148 rats, including 24 controls, infected with *Br. melitensis*, 66·6% of those treated with chloramphenicol and 77·8% of those treated with chloramphenicol combined with *p*-aminobenzoic acid survived. *p*-Aminobenzoic acid alone and menadione (vitamin K3) did not protect. Some survivors killed up to 5 months afterwards gave positive results to bacteriological examination and agglutination tests, indicating incomplete elimination of the infection.

In a small experiment similarly performed *Br. abortus* was used.—R.M.

DALRYMPLE-CHAMPNEYS, W. (1953). **Brucella infections in man and animals in Great Britain: epidemiology and the future.**—*Vet. Rec.* **65**,

99-102. Discussion: pp. 102-104. **1835**

The author examined the role of infected milk as the source of undulant fever in man, emphasizing the public health measures for controlling the disease. The presence of aberrant melitensis-like strains in Gt. Britain and the use of Strain 19 vaccine were also discusssed.—E. A. GIBSON.

GREGORY, T. S. (1952). **Intracaudal vaccination with *Brucella abortus*, Strain 19.**—*Aust. vet. J.* **28,** 265-270. **1836**

With one fifth of the normal dose of Strain 19 *Br. abortus* vaccine given s/c in the tail, calves subsequently developed an immunity during the first and second pregnancies equal to that produced by the standard method of s/c injection.—D. C. BLOOD.

JELLISON, W. L., KOHLS, G. M. & PHILIP, C. B. (1951). **Tularemia—muskrats as a source of human infection in Utah.**—*Rocky Mountain med. J.* **48,** 594-597. **1837**

Tularemia was diagnosed in a muskrat found dead during an epizootic. Details were given of concurrent cases in persons handling muskrats.—E. A. GIBSON.

KELEN, A. (1952). **Bovine leptospirosis in Hungary.**—*Acta vet. hung.* **2,** 289-302. [In English. Russian summary.] **1838**

This first report of bovine leptospirosis from Hungary described 5 endemic outbreaks in calves, 2 weeks–4 months old. Symptoms included fever, icterus, haemoglobinuria and anaemia; recovered calves remained stunted. A focal interstitial nephritis was found P.M. Morbidity among calves was 60–90% and mortality up to 20%. Leptospira were demonstrated in sections of kidneys of dead calves and were recovered from blood, urine and tissue suspensions by hamster inoculation. The species of leptospira isolated was not identified. Hamsters died in 5–6 days; a non-fatal febrile reaction occurred in g. pigs. The organism multiplied in the chorio-allantoic fluid of embryonated eggs, appearing in 5–7 days, but failed to kill the embryo until the 4th passage. Artificially infected calves developed a febrile reaction and recovered leptospira were found in kidney sections 6 weeks after inoculation.

Sera from sick calves failed to agglutinate *L. pomona, L. australis, L. grippo-typhosa* and *L. sejroe* to over 1:40, but were not tested against the homologous strain. Penicillin given early prevented severe illness in field cases but failed to rid the tissues completely of leptospira.
—J. E. SMITH.

LANGFORD, E. V. (1952). **Observations on a Leptospira sp. from the blood and urine of a dog in Southern Alberta.**—*Canad. J. comp. Med.* **16,** 254-256. **1839**

Leptospira were observed in the blood on the 18th and 24th days and in urine on the 19th day of illness. The organism was maintained by g. pig passage but grew with difficulty on artificial medium.—R. GWATKIN.

SELMAN, D. (1952). **The treatment of canicola fever with chloramphenicol.**—*Antibiot. & Chemother.* **2,** 329-331. [Abst. from abst. in *Bull. Hyg., Lond.* **27,** 1028. (1952).] **1840**

Chloramphenicol appeared to produce dramatic improvement in a case of canicola fever in a human being after aureomycin had been found to be without value at the dosage employed.

GRINER, L. A. & BRACKEN, F. K. (1953). *Clostridium perfringens* **(type C) in acute hemorrhagic enteritis of calves.**—*J. Amer. vet. med. Ass.* **122,** 99-102. [Authors' summary modified.] **1841**

An apparently new, acute, infectious disease of young calves, recalling enterotoxaemia of lambs but probably caused by *Cl. welchii* type C, was described. One typical case of haemorrhagic enteritis was produced experimentally by forcibly feeding a dairy calf with a pure, viable culture of *Cl. welchii* type C mixed with maize meal and milk.

REIMANN, B. (1952). Wachstumsbeobachtungen an dem Bazillus Welch Typ F (Bazillus enterotoxicus Zeissler) unter Penicillineinwirkung. **[Growth of *Clostridium welchii* type F in the presence of penicillin.]**—*Zbl. Bakt. I. (Orig.)* **159,** 88-94. **1842**

R. described, with illustrations, the cultural and morphological characteristics (unstained) of *Cl. welchii* type F in penicillin concentrations ranging from 0·0157 to 0·125 units per ml.
—G. P. MARSHALL.

ADLER, H. C., ALBERTSEN, B. E., RASBECH, N. O. & SZABO, L. (1952). **Investigations into *Vibrio fetus* infection in Danish cattle.**—*Rep. IInd Int. Congr. Physiol. anim. Reprod., Copenhagen,* 1952. **3,** 149-158. [In English. French and German summaries.] **1843**

Most infection is transmitted by bulls, other sources of infection being of less importance. Semen from certain bulls is the most important source of infection: this constitutes a rational basis for the elaboration of efficient control of infertility. Carrier bulls can be detected by experimental transmission to a limited number

of virgin heifers. The antibody titre of vaginal mucus, upon which diagnosis was based in the experiments, could be followed with sufficient certainty by means of tests made about 30 and 50 days respectively after insemination.—A.S.

ADLER, H. C., ALBERTSEN, B. E., RASBECH, N. O. & SZABO, L. (1952). Diagnosticering af Vibrio fetus-infektionen hos tyre ved smitteforsøg. **[Diagnosis of *V. fetus* infection in bulls. Attempts at transmission by artificial insemination.]**—*Nord. VetMed.* **4,** 462-470. [In Danish, English and German summaries.] **1844**

V. fetus infection was diagnosed in 10 out of 14 bulls, suspected to be infected, by using their semen to inseminate virgin heifers, which were examined by the method described by Szabó [*V.B.* **22,** 1891]. It was estimated that reliable results are obtainable by this method if at least 6 heifers are used per bull.

—J. EDWARDS.

MOMBERG-JØRGENSEN, H. C. (1953). Nogle sjaeldne infektioner hos pelsdyr. **[Bacterial diseases of fur animals.]**—*Medlemsbl. danske Dyrlaegeforen.* **36,** 53-61. **1845**

This is an account of diseases of fur animals diagnosed from pathological material sent to the State Veterinary Serum Laboratory, Copenhagen. The diseases featured include septicaemic and localized staphylococcal infections, pneumococcal infection, infectious necrosis caused by "B. necroseos" [? *Fusiformis necrophorus*], vibrionic metritis and peritonitis and streptothricosis. The clin. characteristics of the conditions were discussed.—J. EDWARDS.

KRASIL'NIKOV, N. A. & NIKITINA, N. I. (1951). **[Effect of bacterial products in inactivating antibiotics.]**—*Microbiology, Moscow.* **20,** 217-222. [In Russian.] **1846**

The authors discussed substances produced by bacteria to protect themselves against the action of antibiotics. The degree of protection given by these substances, from some 30 spp. of *Escherichia, Sarcina, Mycobacterium* and others, against penicillin, streptomycin and mycetin was tested by mixing *in vitro* the filtrate from each of these bacteria with one of the antibiotics and adding *Staphylococcus aureus;* the degree or absence of growth of the latter was used as indication of whether the particular bacterial substance inhibited the antibiotic present. It was found that some inactivated an antibiotic, a few enhanced the action, a third group proving neutral in this respect. Penicillin was the easiest to be inhibited, then streptomycin, mycetin being the most resistant. Four tables of results were given.—F.A.A.

COLE, C. R., CHAMBERLAIN, D. M. & PRIOR, J. A. (1951). **Incidence, symptomatology, and diagnosis of canine histoplasmosis.**—*Proc. 88th Ann. Meet. Amer. vet. med. Ass.* Milwaukee. Aug. 20-23, 1951. pp. 179-181. **1847**

The authors described *H. capsulatum* infections in dogs with chronic cough or chronic dysentery; besides the respiratory and digestive systems the lymphatic system was most commonly involved; symptoms, diagnosis and P.M. findings were given in detail. Of 2,867 dogs tested by the histoplasmin skin sensitivity test 38 (1·32%) reacted, and in 26 of these the infection was subsequently confirmed.—C. A. E. BRIGGS.

HOLZWORTH, J. (1952). **Cryptococcosis in a cat.**—*Cornell Vet.* **42,** 12-15. **1848**

An account of general infection in a 6½-year-old cat, the causal organism, identified only on the morphology in the lesions, being considered to have been *Cryptococcus neoformans.*—J. T. DONE.

CHRISTENSEN, C. M. [Professor of Plant Pathology, University of Minnesota.] (1951). **The molds and man. An introduction to the fungi.** pp. viii + 244. Minneapolis: University of Minnesota Press. London: Geoffrey Cumberlege; Oxford University Press. 21s. **1849**

This interesting book, giving a general account of the fungi, is written for the layman who wants sufficient information about the fungi to be able to talk and write intelligently about them, and for students beginning a study of mycology with a view to more advanced work. Fungi which cause diseases in plants and animals and spoilage of manufactured products are discussed, in addition to those which are grown commercially for the production of drugs, organic acids and enzymes used in the processing of food. There is a useful appendix giving a summary of the classification of the fungi, an index is provided, and the text has a few illustrations.—E. MARSH JONES.

KULIEV, A. V. (1950). **[Transmission of contagious agalactia in sheep and goats.]**—*Dokl. vsesoyuz. Akad. sel'skokhoz. Nauk.* **15,** Pt. 4. pp. 42-46. [In Russian.] **1850**

After examining 20 sheep and goats K. stated that excretion of the organism continued for 7 months *via* the milk, urine, faeces, eye exudate and from the uterus after abortion. In all, 85 strains were isolated.—F.A.A.

HOBSON, P. N. & MACPHERSON, M. J. (1953). **Encapsulation in rumen bacterial fractions.** [Correspondence.]—*Nature, Lond.* **171,** 129-130. **1851**

The authors demonstrated heavily encapsulated bacteria in sheep rumen contents. The rumen samples were centrifuged at low temperatures to avoid the complicating effects of peat.—A. H. LINTON.

BERULAVA, S. I. (1951). [**Capacity of micro-organisms to mutate.**]—*Veterinariya, Moscow.* **28,** No. 12. pp. 8-12. [In Russian.] **1852**

Salmonella and *Pasteurella* spp. and *Bacillus anthracis* were subjected either to boiling, autoclaving for 30–40 min. at 100–127°C., treatment with 2·5% phenol or to combined actions, before they were sown on media. It was stated that such treatment does not necessarily kill but mostly only inactivates virulence, this in most cases being gradually recovered by 1–50 or more passages *in vivo* or *in vitro*. Of the other original properties, not all were necessarily equally restored, mutation occurring in form, in characteristics or by polymorphism of the cytological content of the cells. On agar and in broth cultures crystal formations occurred in the earlier stages.

The various mutants obtained in this way were found to be avirulent and non-agglutinable, heat stable and unusually resistant to bactericidal agents. It is thought that such mutants develop when placed under unfavourable conditions; organisms may thus be preserved in nature for long periods.—F.A.A.

MUKHERJEE, B. N. (1952). **Bartonella in goats.**—*Indian vet. J.* **28,** 343-351. **1853**

An account of *Bartonella* infection in goats injected with rinderpest virus. The parasites appear in the blood on the fourth day after the injection of the virus. They occur mostly during the winter months.—H. S. DHILLON.

WIGAND, R. (1952). Neue Untersuchungen über Bartonella bacilliformis. II. Verhalten gegenüber Sulfonamiden und Antibiotica in vitro. [**Research on** *Bartonella bacilliformis.* **II. Effect of sulphonamides and antibiotics** *in vitro.* **(Human.)**]—*Z. tropenmed. u. Parasit.* **3,** 453-460. [Abst. from English abst.] **1854**

Tests were carried out *in vitro* to investigate the effects of various concentrations of penicillin, streptomycin, aureomycin, chloromycetin, and terramycin on *B. bacilliformis* cultured in Noguchi's semi-solid leptospira medium. Comparative tests were made with sulphonamides (sulphathiazole, gantrisin, supronal).

Bartonella were most effectively detected by dihydrostreptomycin, terramycin and penicillin. While such tests *in vitro* are not entirely reliable—sulphonamides in particular being impaired by the presence of serum and peptone in the culture—the experiments plainly showed a high sensitivity of the organism to antibiotics and a relatively high resistance to sulphonamides.—A.S.

NIVEN, J. S. F., GLEDHILL, A. W., DICK, G. W. A. & ANDREWES, C. H. (1952). **Further light on mouse hepatitis.**—*Lancet.* **263,** 1061. **1855**

The labile component of the aetiological agent of mouse hepatitis appears to be *Eperythrozoon coccoides,* a mouse parasite related to *Bartonella.* Without the labile component, only minimal hepatic lesions are produced by the stable virus component.—A. ACKROYD.

See also absts. **2098** (bacterial content of milk); **2100** (TB.); **2148** (report, Australia); **2149** (report, Denmark).

DISEASES CAUSED BY PROTOZOAN PARASITES

HOARE, C. A. (1952). **The taxonomic status of biological races in parasitic protozoa.**—*Proc. Linn. Soc. Lond.* Session 163, 1950-51. Pt. 1. pp. 44-47. **1856**

There are many parasitic protozoa and morphologically identical groups which differ from each other only in biological features and especially in host-parasite relations. Although classed collectively as 'biological races' these groups are not all homogeneous in constitution and are therefore not equivalent as they differ both in their mode of life and in the constancy of their biological characters. Biological groups have had no accepted status and it is of academic and practical importance that their taxonomic status should be recognized. Taxonomic differentiation is determined by isolation and there is no fundamental difference between geographical races of free-living organisms and biological races of parasites although the perpetuation of the former is ensured by spatial segregation whereas differences in the mode of life account for it among parasites. Biological and morphological groups are not necessarily on the same level of speciation. There are plausible grounds for regarding physiological divergence as an earlier stage of the process. As a working hypothesis it can be assumed that in some cases the initial stage of variation is manifested by invisible physiological changes to which visible morphological changes may subsequently be added. Until this level is reached

biological races should be treated as intraspecific units which, like geographical races, represent incipient species. These hereditary fixed biological races can be regarded as subspecies while those which are environmentally induced and unstable are equivalent to morphae. H. believes that these conclusions apply equally well to biological races among other entozoic and ectozoic animal parasites.

—C. Horton Smith.

Hornby, H. E. (1952). **Animal trypanosomiasis in Eastern Africa, 1949.** pp. 39. London: H.M. Stat. Off. 7s. 6d. **1857**

After Professor P. A. Buxton had visited East and Central Africa in 1946-47 on behalf of the Tsetse Fly and Trypanosomiasis Committee he recommended that a veterinary expert should report on the losses among livestock and make suggestions for research and practical control measures. This report is the outcome of the author's six months journey in 1949 and it forms a companion to Buxton's earlier publication [*V.B.* **20, 71**].

It begins with a brief review of the various species of trypanosome which affect livestock in the area, with the disease which each species produces and with mixed infections. There is a section dealing with the interaction of host and parasite, prognosis as affected by naturally acquired immunity and chemotherapy, and cyclical and mechanical transmission. Excluding *T. theileri* infection, trypanosomiasis of domestic animals in E. Africa can be treated epizootically as two diseases—nagana which is caused by half a dozen trypanosomes which are usually transmitted cyclically, and surra in camels which is transmitted mechanically by Tabanidae. In East Africa surra occurs only in the Northern Frontier Province of Kenya and in Zanzibar and responds readily to a single i/v inj. of naganol.

Another section deals with the distribution of domestic animals and of tsetse flies and the significance of climate, vegetation, game and overstocking.

Short sections deal with the place of stock in native agriculture, recent advances in methods of control of trypanosomiasis, and methods of providing more and better grazing by bush clearing, raising the standard of farming and avoiding overstocking.

No suggestions for further trypanosomiasis research are made because this is provided for by the East African Tsetse and Trypanosomiasis Research and Reclamation Organization, but the author pleads for more research on range and pasture management so that when areas are freed from trypanosomiasis they may not fall a prey to the even greater evil of soil erosion. Pasture management and disease control must go hand in hand. Advances in mechanized agriculture, chemotherapy and knowledge of the bionomics of tsetse, together with the new insecticides, have opened up possibilities of effective control of nagana. Losses from the disease cannot be precisely determined because they are largely indirect. Pilot schemes already in being in the various parts of E. Africa should be continued and extended: from them there may emerge one or more policies suitable for wide application throughout the area. Some suggestions for such pilot schemes are made in an appendix.

A bibliography and a plate of drawings of the seven species of trypanosome which are of importance in animals in E. Africa are included.

In conjunction with Buxton's earlier report, this publication provides an account of trypanosomiasis in E. Africa which all who are concerned with the problem will find invaluable. The provision of maps would have added much to the interest of the Report.—E. G. White.

I. Unsworth, K. & Nesbitt, P. E. (1952). **Studies of *Trypanosoma vivax*. II. The maintenance of a strain in rabbits.**—*Ann. trop. med. Parasit.* **46,** 85-91. [Abst. from authors' summary. For part I, see *V.B.* **22,** 3314.] **1858**

II. Desowitz, R. S. & Watson, H. J. C. (1952). **Studies on *Trypanosoma vivax*. III. Observations on the maintenance of a strain in white rats.**—*Ibid.* 92-100. [Authors' summary slightly modified.] **1859**

I. A brief review was given of recorded attempts to establish strains of *T. vivax* in rabbits. By means of a strain of *T. vivax* isolated from a naturally infected sheep in Northern Nigeria, it was possible to infect rabbits by direct blood inoculation from infected sheep. The maintenance of the same strain of *T. vivax* by blood inoculation from rabbit to rabbit could be successfully accomplished up to the second passage only, but it was found possible to maintain *T. vivax* by serial passage in rabbits when supplementary inoculations of normal sheep or bovine blood were given within 24 hours of the inj. of infected rabbit's blood. By this means *T. vivax* was succesfsully passaged through rabbits on 30 successive occasions. An account was given of the course of infections with *T. vivax* established in rabbits in this way.

Although the mode of action of sheep or bovine blood in facilitating the passage of *T. vivax* in rabbits is not yet determined, it was

shown that the factor or factors responsible are contained in the fluid and not in the cellular elements of blood. Sheep or bovine plasma when heated to 62°C. appears to have a better action in promoting the development of *T. vivax* infections in rabbits than unheated serum; but this observation requires confirmation.

The possibility of maintaining the strain without supplementary inoculation is as remote after the 30th rabbit passage as with the freshly isolated strain.

II. By inoculating rats with clean sheep blood or serum 24 hours after the infective dose of trypanosomes it has been possible to subpassage a strain of *T. vivax* in white rats on 32 occasions over a period of 107 days. At the time of writing the strain is still being maintained. Subpassage is effected when as little as 0·005 ml. of sheep serum is given as supplement, although less than 0·05 ml. does not maintain as high an initial parasitaemia for as long as larger quantities.

The greater percentage of rats which become heavily infected in the later rat subpassages indicates that the infection becomes progressively more severe. Even at the 32nd subpassage, however, it was impossible to effect subpassage without the use of the supplementary inoculation of sheep serum.

The occurrence of relapsing infections in the rat was described. The trypanosomes taken for subinoculation at relapses are less liable to produce infection on subpassage than those taken at the primary attack.

Coceani, A. & Call, C. (1952). Esperimenti sull'azione profilattica e terapeutica svolta dal metilsolfato di antrycide nei confronti del Trypanosoma vivax dello zebù eritreo. [**Antrycide methyl sulphate in prophylaxis and treatment of experimental *T. vivax* infection in Eritrean cattle.**]—*Profilassi.* **25,** 209-218. [Spanish summary.] **1860**

Experiments with antrycide methyl sulphate were carried out on zebu cattle in 1949 in an area where trypanosomiasis does not naturally occur.

Toxicity tests in 7 animals with single s/c inj. of 0·5–12 mg./kg. showed that doses of 4–6 mg./kg. produce signs of intolerance and that 8 mg./kg. appears to be the max. dose compatible with survival (subsequently, however, animals survived as much as 10 mg./kg.). 5–7 mg./kg., although consistently toxic, was regarded as an adequate, non-lethal therapeutic dose.

Prophylactic tests in 19 animals consisted of single injections of antrycide in doses ranging from 0·5 to 10 mg./kg., followed after 10–33 days by s/c injections of calf blood infected with *T. vivax*. In 11 of 12 animals on 4–10 mg./kg. (one died from the toxic effects of 8 mg./kg) parasites appeared in the blood after 11–43 days, while the remaining one (10 mg./kg.) was completely protected; none of the animals showed any clin. signs of the disease throughout the 153-day period of observation.

Therapeutic tests were carried out in 20 animals with doses of 0·25–8 mg./kg., given 1–6 days after the appearance of parasites in the blood. Doses of up to 4 mg./kg. freed the peripheral blood from parasites for some days or weeks, but did not prevent their reappearance and the ultimate death of the animal. 5 mg./kg. produced the best results: complete eradication of *T. vivax* from 5 of 8 animals, reappearance of parasites after 41–64 days in the remaining 3, without clin. signs of the disease (182 days' observation). When those previously treated with insufficient doses were given a second treatment, doses of 3 mg./kg. proved inadequate, while 6–7 mg./kg. was completely effective. A third treatment with the same dose was effective in 2 of the remaining 4 animals.

From the continued absence of clin. signs after the reappearance of parasites in the blood of some animals in both the prophylactic and the curative tests the authors concluded that antrycide facilitates the establishment of premunition.

Throughout the experiments there was no evidence of the parasite becoming resistant to antrycide.—G. P. Marshall.

Unsworth, K. & Chandler, R. L. (1952). **Field trials with prophylactic antrycide in West Africa.**—*Ann. trop. Med. Parasit.* **46,** 240-249. **1861**

Antrycide was injected as a suspension, at the dosage rate of 1·5 g. of the methyl sulphate, and 2 g. of the chloride for a 300 kg. beast. The dose was administered on a wt. basis, and repeated at 3-monthly intervals.

A total of 38 treated and 10 untreated cattle were exposed to infected *G. palpalis*. The treated animals survived the contact with trypanosomiasis, but all the untreated animals died. Trypanosomes were present in the blood of 5–12% of the treated animals at the end of the first 3-month period, but the infections were overcome by the subsequent injections. Nevertheless the authors suggested that the interval between inoculations should be reduced from 3 months to 70 days to lessen the chances of development of antrycide resistant strains of trypanosomes.

Thirty-seven treated and 10 untreated cattle were exposed to infected *G. morsitans*. Trypanosomes were present in the blood of 67% of the treated cattle at the end of the first 3 months. Subsequent inoculations failed to overcome the infection in 50% of cases. All the untreated cattle died. The authors conclude that antrycide failed to give protection against infected *G. morsitans*, when inoculated at 3-monthly intervals.—D. W. JOLLY.

DEOM, J. (1952). **Therapy of the trypanosomiasis in bovines by a new derivate of phenanthridinium, the 150C47 B & W.**—*Bull. Bur. interafr. Tsé-Tsé.* B.P.I.T.T. No. 190/T. pp. 6. [Mimeographed.] **1862**

Ninety cattle affected with *T. vivax* or *T. congolense* were given 1 mg. phenanthridinium 150 C 47 per kg. body wt. All *T. congolense* infections and 50% of those involving *T. vivax* were cured. The drug, which was given i/v and s/c, caused a violent local reaction after s/c administration.—JAS. G. O'SULLIVAN.

ORMEROD, W. E. (1952). **A study of resistance to antrycide in a strain of *Trypanosoma equiperdum*.**—*Brit. J. Pharmacol.* **7,** 674-684. **1863**

Methods for producing resistance to antrycide in strains of *T. equiperdum* maintained in mice were described. The cross resistance of such strains to dimidium and stilbamidine was demonstrated. Differences between the resistant and normal trypanosomes in their absorption of antrycide and 2-hydroxy stilbamidine were observed by fluorescence microscopy.

Inclusion bodies appeared in the cytoplasm of the antrycide-resistant trypanosomes and similar inclusion bodies appeared in another strain accidentally treated with "rhodamine B" (the hydrochloride of diethyl-*m*-amino-phenolphthalein).

The observations were discussed in relation to a previous interpretation of the mode of action of antrycide [*V.B.* **21,** 3196].

—L. P. JOYNER.

CAMAND, M., CAMOU, M. & VERCELLOTTI, M. (1952). Le traitement de la dourine par la p.p' diamidino-di-phénoxy-pentane. **[Treatment of dourine with pentamidine.]**—*Bull. Soc. Path. exot.* **45,** 608-612. **1864**

The i/m inj. of pentamidine in doses of 6 mg./kg., the inj. being repeated in 24–48 hours, cured 49 out of 50 cases of dourine. The cure in acute cases was achieved in about 5 days, but took longer in subacute and chronic cases.—JAS. G. O'SULLIVAN.

KRANEVELD, F. C. & DJAENOEDIN, R. (1949). Enige gegevens over het moment van binnendringen van Trypanosoma evansi in de cerebrospinaalvloeistof bij paarden. **[Presence of *T. evansi* in the cerebrospinal fluid of horses.]**—*Hemera Zoa.* **56,** 39-45. [English and French summaries.] **1865**

In 10 horses experimentally infected with *T. evansi* the parasites were demonstrated in the c.s.f. before the development of nervous symptoms; the fluid was withdrawn only once from each horse because of the danger of introducing infection with the puncture needle.

Only erythrocyte-free samples were used for further examination. For this reason samples from 5 other infected horses were discarded.—C. A. VAN DORSSEN.

NANI, S. (1951). Richerche sulla resistenza a temperatura ambiente ed in ghiacciaia del *Trypanosoma evansi*. **[Resistance of *T. evansi* at room temperature and in the refrigerator.]**—*Riv. Parassit., Rome.* **12,** 227-232. [English summary.] **1866**

T. evansi in citrated blood from infected dogs maintains its infectivity for white mice for 72 hours at room temp. (approx. 18°C.), though the cytoplasm of the parasite undergoes evident autolytic changes. At 0°C. the parasite loses its infectivity after 58 hours, though its morphology and motility are apparently unaffected.—I. MARTINI.

YASAROL, S. (1951). Contribution à l'étude du diagnostic de la Leishmaniose générale du chien. **[Diagnosis of *Leishmania* infection in dogs.]**—*Thesis, Alfort.* pp. 62. **1867**

A review of the clinical aspects of canine leishmaniasis. Diagnostic tests recommended are the formolgel, serum flocculation with distilled water and complement fixation. Parasites are demonstrated most frequently in biopsies of lymph nodes, nasal mucosa, testicles and skin.—E. J. L. SOULSBY.

PARROT, L. & DONATIEN, A. (1952). Autres observations sur l'infection naturelle des phlébotomes par la leishmaniose générale de l'homme et du chien en Algérie. **[Natural infection of *Phlebotomus* spp. with *Leishmania* in Algeria.]**—*Arch. Inst. Pasteur Algér.* **30,** 146-152. **1868**

P. perniciosus and *P. longicuspis* are important natural vectors of *Leishmania* in N. Africa. Figures were given of the seasonal incidence and of the frequency, site, and intensity of infection.—M. L. CLARKE.

DAVIES, S. F. M. & KENDALL, S. B. (1953). **Toxicity of sulphaquinoxaline (2-sulphanilamidoquinoxaline) for chickens.**—*Vet. Rec.* **65,** 85-88. [Authors' summary modified.] **1869**

Laboratory observations showed that sodium sulphaquinoxaline at a conc. of 0·0645% in drinking water may induce toxic symptoms in chickens even when used for 5 days only. Higher concentrations of the drug or its use for more extended periods can produce more serious effects. These observations confirm field reports of toxicity associated with the use of the drug in controlling caecal coccidiosis. Preliminary observations suggested that toxicity is associated not only with an excessively high intake of the drug but also with the age of the chick, the mode of administration of the drug and the presence of intercurrent disease.

DAUBNEY, R. & SAMI SAID, M. (1951). **Egyptian fever of cattle. The transmission of *Theileria annulata* (Dzchunkowsky & Luhs 1904) by *Hyalomma excavatum,* Koch, 1844.**—*Parasitology.* **41,** 249-260. [Abst. from authors' summary.] **1870**

Egyptian fever of cattle has been observed at the Serum Institute, Abbassiah, in Cyrenaican and Cyprus cattle, and less frequently in indigenous Egyptian cattle. The responsible *Theileria* was determined as *T. annulata,* and both natural and experimental transmission were demonstrated with *Hyalomma excavatum,* which in Egypt is a three-host tick and hibernates during the winter months in the walls of buildings in the engorged nymphal and fasting adult stages. Transmission was effected with nymphae and adults, infected in each case by feeding the preceding stage on reacting or recovered cattle. On no occasion was infection observed to pass through the egg to the larval stage. Infection could also be transmitted by inoculation of the blood of a reacting animal in which schizonts were demonstrable.

CAMOU, M., GRIMPRET, M. & VERCELLOTTI, M. (1952). Essais de traitement de la theilériose bovine à *Th. dispar* per le diéthylamino-4′-méthyl-1-butyl-amino-4-chloro-7-quinoléine. **[Treatment of theileriasis with "nivaquine".]** —*Bull. Soc. Path. exot.* **45,** 604-608. **1871**

Diethylamino-methyl-butyl-amino-chloroquinoline given on 3 successive days at the rate of 0·01 g./kg. or on 2 successive days in doses of 0·02 g./kg. was effective in curing 24 out of 25 cases of theileriasis. Two-thirds of the dose was given *per os* and one-third i/m.

—JAS. G. O'SULLIVAN.

RABILLON, R. (1951). Pénicilline et protozooses animales. **[Penicillin in animal protozoan diseases.]**—*Thesis, Alfort.* pp. 43. **1872**

Rabbit syphilis, avian spirochaetosis, canine babesiasis and cattle theileriasis are considered to be amenable to penicillin therapy. Penicillin is effective in primary leptospirosis of dogs, but its action is doubtful in the renal phase of leptospirosis and in leishmaniasis. [Spirochaetes and leptospira are not now generally classified in the Protozoa.]—JAS. G. O'SULLIVAN.

MØLLER, T. (1952). **Toxoplasmosis vulpis vulpis. (Fox toxoplasmosis.)**—*Acta path. microbiol. scand.* Suppl. No. 93. pp. 308-320. Discussion: pp. 330-331. [In English.] **1873**

Toxoplasms were demonstrated in lesions of the stomach, liver and lungs while inclusion bodies were seen in the urinary bladder and trachea of two silver foxes. M. suggested that in another sick fox, the lymphadenitis may have been caused by *Toxoplasma.*

—JAS. G. O'SULLIVAN.

WESTPHAL, A. & MÜHLPFORDT, (1950). Untersuchungen über Wesen und Fehlerquellen des Toxoplasmose-Serofarbtestes nach Sabin und Feldman. **[Research on the toxoplasmosis test of Sabin and Feldman.]**—*Z. Hyg. InfektKr.* **131,** 423-434. **1874**

Only about 20% of normal sera used as activator for this test are suitable on account of non-specific reactions which increase on storage of the serum. Considerable information was given on the treatment, storage and transport of such sera.—M. L. CLARKE.

LOCK, J. A. (1953). **Cultivation of *Toxoplasma gondii* in tissue culture in mammalian cells.**—*Lancet.* **264,** 324-325. **1875**

Embryonic-rat-heart tissue culture was inoculated with *Toxoplasma* and invasion of the host cells was evident 18 hours after inoculation. Growth was observed up to 10 days after inoculation.—JAS. G. O'SULLIVAN.

WESTPHAL, A. (1950). Das Vorkommen von Toxoplasmose in Deutschland und ihre Behandlungsmöglichkeit mit Aureomycin. **[Aureomycin treatment of toxoplasmosis in Germany.]**—*Z. Tropenmed. u. Parasit.* **1,** 526-532. **1876**

Examinations with the Sabin-Feldman test for toxoplasmosis gave a toxoplasm-infection index of about 2% in healthy persons. Persons with typical signs of or suspected to have toxoplasmosis gave 18·6% positive reactions. In a group of 13 stillborn infants 10 were found to be positive and of 8 foetuses from miscarriages

only 3 were positive. When aureomycin was given to 2 cases of lab. infection with a constant titre, the titres became negative after 2 or 3 weeks. One patient reacted with varying symptoms of intoxication, probably caused by the breakdown of the organisms.—H. BEHRENS.

CROSS, J. B. (1952). **Diasone, avlosulfon and sulphetrone as therapeutic agents in experimental toxoplasmosis.**—*Amer. J. trop. Med. Hyg.* **1,** 593-597. **1877**

"Diasone" (disodium formaldehyde sulphoxylate diamino diphenyl sulphone) and "aolosulfon" (4:4′-diamino diphenyl sulphone) protected the majority of mice against an otherwise fatal toxoplasmosis.

By passage of brain tissue to susceptible mice, evidence was obtained that the parasites had been eliminated in at least 7 out of 11 treated survivors.—L. P. JOYNER.

SCHMIDT-HOENSDORF, F. & HOLZ, J. (1953). Versuche zur Klärung der serologischen Verwandtschaft zwischen Sarcoplasmen und Toxoplasmen. [**Serological relationship between** *Sarcocystis* **and** *Toxoplasma.*]—*Berl. Münch. tierärztl. Wschr.* **66,** 12-13. **1878**

Serological relationship between *Sarcocystis* and *Toxoplasma* was not demonstrable by several modifications of the Sabin-Feldman test. —H. BEHRENS.

See also abst. **2148** (report, Australia).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

DATTA, S. (1951). **Problem of foot and mouth disease in India.**—*Indian vet. J.* **27,** 403-411. **1879**

D. drew attention to the importance of conserving and improving animals as a source of essential human foods and referred to F. & M. disease research as a field for international co-operation. The potentialities of Indian livestock, the progress made in the control of epizootics and the annual economic loss are dealt with in detail.

The epidemiology of the disease in India and the work carried out under a research scheme started at Mukteswar in 1943 have been described. The crystal violet method of vaccination has proved superior to the aluminium "gel" adsorbed vaccine, being simpler to prepare, cheaper and more efficacious. D. suggested that arrangements be made by F.A.O. for the rapid interchange of information and pooling of resources.—V. R. GOPALAKRISHNAN.

BEIJERS, J. A. (1952). Mond- en klauwzeerbestrijding. [**Control of foot and mouth disease.**]—*Tijdschr. Diergeneesk.* **77,** 630-635. [English, French and German summaries.] **1880**

In the Netherlands results of police measures to control F. & M. disease have never been satisfactory.

Excellent results were obtained with culture virus vaccine.—C. A. VAN DORSSEN.

MANCINI, A. (1952). Il siero-protein-vaccino Lanfranchi nella profilassi accerchiante e nella terapia della febbre aftosa. [**A serum-protein vaccine for prophylaxis and treatment of foot and mouth disease.**]—*Nuova Vet.* **28,** 74-76. **1881**

A vaccine consisting of the three types of F. & M. disease virus as well as of various complicating pathogens was highly successful in the control of the disease in cattle, but somewhat less so in pigs.—G. P. MARSHALL.

MÖHLMANN. (1952). Über das Zustandekommen der aktiven Immunität der Maul- und Klauenseuche. [**Active immunity in foot and mouth disease.**]—*Zbl. Bakt. I.* (*Orig.*) **158,** 168-170. **1882**

Experiments showed that blood taken from recently vaccinated cattle could be infective for non-vaccinated cattle.—R.M.

THOMAS, J.-A., THIÉRY, J.-P., SALOMON, LOUIS & SALOMON, LÉONE. (1952). La culture du virus de la fièvre aphteuse en très grande quantité sur embryome spécifique géant, chez la vache. [**Mass cultivation of foot and mouth disease virus.**]—*C.R. Acad. Sci., Paris.* **235,** 520-521. **1883**

Described the technique in which calf embryo epithelium is injected into cows to provoke a massive local reaction. Infection with F. & M. disease virus results in the recovery of up to 15 kg. of virulent material. —G. V. LAUGIER.

GIROUD, P. & CIACCIO, G. (1952). Au sujet de la sensibilité au virus aphteux de la souris de quelques jours. Dosage de la virulence. [**Susceptibility of unweaned mice to foot and mouth disease virus.**]—*C.R. Soc. biol., Paris.* **146,** 1506-1508. **1884**

Young mice were found suitable for the passaging of F. & M. disease virus; the intracerebral route was effective even for Type C previously passaged cutaneously in g. pigs. The

entire bodies of the young mice are used in the preparation of vaccine.—A.S.

RÖHRER, H. (1952). Die allmähliche Adaption des Rindervirus der Maul- und Klauenseuche vom B-Typ an das Mäusegehirn durch Wechselpassagen. **[Gradual adaptation of the foot and mouth disease virus type B (French A) to the mouse brain.]**—*Zbl. Bakt. I.* (*Orig.*) **158,** 312-313. **1885**

After 135 passages from cattle-tongue to mouse brain and cattle-tongue the virus type A proved to be adapted to the mouse brain and suitable for the production of F. & M. disease vaccine.—H. BEHRENS.

GARCÍA PIRAZZI, A. J. (1952). Conservación del virus aftoso en medio Vallée, glicerina al 50% y por congelación. **[Preservation of foot and mouth disease virus in Vallée's medium, in 50% glycerin and by freezing.]**—*Gac. vet., B. Aires.* **14,** 243-246. [Abst. from English summary.] **1886**

Various strains of F. & M. disease virus were kept in Vallée's medium and in 50% glycerin-water in the ice-box at 3° to 5°C. and were also kept in frozen tap water at 20°C. Strains kept in Vallée's medium were still virulent after 6 years and 7 months: one kept in 50% glycerin-water was still virulent after 6 years and 6 months and another one kept in frozen tap water was still virulent after 5 years.

ROMANELLI, V. (1951). Influenza della mesomucinasi nella evoluzione della infezione aftosa sperimentale delle cavia. **[Effect of mucinase on experimental foot and mouth disease in g. pigs.]**—*Atti Soc. ital. Sci. vet.* **5,** pp. 338-341. [English summary.] **1887**

Mucinase injected into g. pigs together with F. & M. disease virus accelerated the development of the specific lesions.—I. MARTINI.

CAMARGO, F., RUIZ-MARTINEZ, C., TELLEZ-GIRON, A. & ZAVAGLI, V. (1952). La stomatite vésiculeuse. Son importance dans le problème d'éradication de la fièvre aphteuse. **[Vesicular stomatitis in relation to the control of foot and mouth disease.]**—*Bull. Off. int. Epiz.* **38,** May. pp. 288-303. [English summary.] **1888**

Susceptible species, virus characteristics and previous work on g. pigs and cross immunity were reviewed. Differential diagnosis by injection into cattle was shown to be uncertain whilst complement fixation is more reliable. A differential diagnostic table has been drawn up showing the relation of vesicular stomatitis, vesicular exanthema and F. & M. disease to horses, cattle, pigs and g. pigs.—G. V. LAUGIER.

SCHOENING, H. W. (1952) La stomatite vésiculeuse et sa différenciation de la fièvre aphteuse. **[Differential diagnosis of vesicular stomatitis and foot and mouth disease.]**—*Bull. Off. int. Epiz.* **38,** May. pp. 304-311. [English summary.] **1889**

The endemic nature of vesicular stomatitis in Mexico, Venezuela and Colombia presents differential diagnostic problems. S. described a lab. technique for rapid diagnosis either by direct serological test using complement fixation or by inoculation into susceptible animals in order to recover fresh epithelium for serological test.—G. V. LAUGIER.

SCHROEDER, C. R., BLACK, J., BURKHART, R. L. & KOPROWSKI, H. (1952). **Rabies in cattle. I. Prevention of vampire bat paralytic rabies, derriengue, by vaccination with chick-embryo-adapted rabies virus.**—*Vet. Med.* **47,** 502-506. **1890**

In experiments and field trials avianised rabies vaccine was harmless to cattle and afforded protection against vampire bat rabies. A total of 6,087 animals were vaccinated with varying doses and remained immune.

—G. V. LAUGIER.

PELLEGRINI, D. (1951). La rabbia in un leone. **[Rabies in a lion.]**—*Atti Soc. ital. Sci. vet.* **5,** pp. 313-315. [English and French summaries.] **1891**

A young lioness bitten by a stray dog developed a form of rabies characterized by hyperexcitability and a severe gastro-enteritis. Death was preceded by paralysis of the hind quarters.—I. MARTINI.

REMLINGER, P. (1952). Une courte épizootie rabique chez des rats d'égout. **[A rabies epidemic in sewer rats.]**—*Bull. Acad. nat. Méd.* **116,** 317-318. **1892**

Of 13 rats captured in Paris sewers three were carriers of rabies virus. The virus was successfully passaged in g. pigs, laboratory rats and mice.—E.G.

REMLINGER, P. & BAILLY, J. (1947). Action du latex de figuier sur le virus de la rage. **[The influence of latex of the fig tree on the virus of rabies.]**—*C.R. Acad. Sci., Paris.* **224,** pp. 1467-1468. **1893**

It was stated that latex of the fig tree contains a proteolytic diastase which destroys rabies virus.—E.G.

NANI, S. (1952). Ulteriori indagini sul fenomeno di adsorbimento nel virus fisso della rabbia. **[Adsorption of rabies fixed virus on erythrocytes.]**—*Arch. vet. ital.* **3,** 97-104.

[English, French, German and Spanish summaries.] 1894

The addition of hyaluronidase to erythrocytes does not inhibit the adsorption of rabies fixed virus; this adsorption might therefore be a simple physico-chemical process (surface tension, etc.).—I. MARTINI.

BEQUIGNON, R. & VIALAT, C. (1952). Modification du virus rabique fixe (souche Pasteur) sous l'action de la hyaluronidase. **[Modification of fixed rabies virus by hyaluronidase.]** —*C.R. Acad. Sci., Paris.* **234,** 897-899. **1895**

Addition of hyaluronidase to a suspension of fixed rabies virus rendered it virulent if applied s/c. From the 6th passage of this s/c series an intracerebral series of passages was started, but instead of a return to the clinical and histological features of fixed virus the new strain showed the characteristics of the street virus.—A. MAYR-HARTING.

LEVADITI, C., VAISMAN, A. & HENRY-EVENO, J. (1952). Symbiose entre le virus Coxsackie, souche encéphalitogène, et le virus de la rage des rues (souche Tanger). **[Symbiosis between the Coxsackie virus and that of rabies.]**—*Ann. Inst. Pasteur.* **82,** 499-502. **1896**

Mixtures of equal parts of brain emulsion of young mice that had died of Coxsackie encephalitis, and of rabbit brains infected with rabies street virus, were injected into new-born and into adult mice. All animals of the first inoculation and of the first passage died. From the second passage onwards the adult mice remained alive, indicating that the rabies virus had been eliminated.—A. MAYR-HARTING.

KOTOV, V. T. (1950). **[Specific prophylaxis of Aujeszky's disease.]**—*Veterinariya, Moscow.* **27,** No. 7. pp. 22-23. [In Russian.] **1897**

Acute Aujeszky's disease on a farm started in piglets and spread to dogs, sheep and a cow. When diagnosis was made, all pigs two months old and upwards were passively immunized, which caused a sharp drop in the infection rate. I/m vaccination [using a trial vaccine prepared by the U.S.S.R. Inst. of Exp. Vet. Sci., no details given] was made 8–10 days later, and repeated after 6–8 days; dose 3 ml. and 5 ml. respectively. Infection then ceased. Dogs were suspected to have spread the disease, hence isolation and strict hygiene appear to be necessary.—F.A.A.

LEROY, D., BIZAIS, J., RICHIER-CHEVREL, M. E. & RICHIER, J.-L. (1952). Une épidémie humaine de cow-pox en Bretagne. **[An epidemic of cow pox in man in Brittany.]**—*Bull. Acad. nat. Méd.* **136,** 546-549. **1898**

An account of a minor epidemic of cow pox in four human beings in Brittany during 1952, and associated with mucous buccal manifestations. Smallpox vaccination in that locality was not carried out extensively.

—W. R. BETT.

WESTWOOD, J. C. N. (1952). **A study of chick embryo lesions produced by influenza viruses.** —*Brit. J. exp. Path.* **33,** 610-619. [Author's summary modified.] **1899**

W. gave detailed description of the lesions produced by the HAL strain of influenza A prime virus in 10-day chick embryos and presented evidence that these lesions are non-specific and may be caused by a wide variety of infective agents. At 11–12 days of incubation there is a sharp decline in the susceptibility of the embryo to the lethal effects of the influenza viruses. The severity of lesions also falls off as the age of the embryo increases.

Newcastle disease infection is much less influenced by increasing age of the embryo and there is no decrease in the severity of the lesions produced.

W. discussed the implications of the differences in behaviour between influenza and N.D.V.

BOWERS, R. H., DAVIES, O. L. & WESTON HURST, E. (1952). **A comparison between intranasal instillation and natural inhalation as means of infecting mice with influenza virus.**—*Brit. J. exp. Path.* **33,** 601-609. [Authors' summary modified.] **1900**

After intranasal instillation of dye the widest variation exists in the amounts reaching the lungs; in some animals none can be seen; from others as much as 15% of the inoculum can be recovered. The authors described a simple apparatus capable of consistently and reproducibly infecting large numbers of mice by inhalation of influenza virus. On the seventh day after infection mouse-to-mouse variations in the pulmonary lesions so induced are materially smaller than those following intranasal instillation of virus by experienced workers. The greater part of the variation still persisting is probably due to differences in the response of individual mice to infection.

Tests with *Chromobacterium prodigiosum* in this apparatus showed that more bacteria reach the upper than the lower parts of the lungs, but that the parts most remote from the main bronchi are infected in all lobes. Irregularities of distribution are less than after intranasal instillation of dye.

The use of different nebulizers of the same general pattern does not affect the mouse-to-mouse variation. A slowly emptying nebulizer, however, was responsible for a lower level of pulmonary infection; in practice, this would be compensated for by the use of a stronger viral suspension.

SALK, J. E., BAILEY, M. L. & LAURENT, A. M. (1952). **The use of adjuvants in studies on influenza immunization. II. Increased antibody formation in human subjects inoculated with influenza virus vaccine in a water-in-oil emulsion.**—*Amer. J. Hyg.* **55,** 439-456. [Authors' summary modified. For part I, see *V.B.* **23,** 891.] **1901**

As a result of observations made in experimental animals in which it was found that influenza virus vaccine in water-in-oil emulsion could be inoculated without untoward local reaction [*V.B.* **21,** 3553], similar investigations were extended to human subjects. In 153 young adults given influenza virus vaccine emulsified in mineral oil no untoward reactions were observed. The difference between these findings and those reported by others in which undesirable reactions were observed at the inoculation site is believed to be due to the inj. of the inoculum i/m rather than s/c and to the use of non-irritating reagents in the preparation of the emulsion.

The results of serological studies indicate a marked enhancement in antibody formation and persistence of the elevated titres for at least 6 months, with observations to follow over a period of several years. Data are presented on antibody response to strains of virus related to but not identical antigenically with those contained in the vaccine. These findings suggest a broadening of the response to include a larger segment of the antibody spectrum as an accompaniment of the adjuvant effect.

GÄDEKE, R. (1952). **Kidney lesions in suckling mice following group A Coxsackie virus infection.**—*Arch. Path.* (*Lab. med.*) **54,** 276-280. [Author's summary modified.] **1902**

Nephrosis was observed in unweaned mice infected with various Group A Coxsackie viruses. The lesion is similar to the so-called crush kidney and may be due to the widespread destruction of striated musculature.

REAGAN, R. L., SCHENCK, D. M., HARMON, M. P. & BRUECKNER, A. L. (1952). **Morphological observations by electron microscopy of "B" virus after propagation in the rabbit.**—*Cornell Vet.* **42,** 328-331. **1903**

Spherical to oval bodies 90 mμ–100 mμ in diam. were evident only in chromium-shadowed concentrated spinal cord of rabbits infected i/d with "B" virus which had previously been passaged 67 times in rabbits.—E. A. HIRSCH.

I DOROGOV, A. V. (1950). **[Use of the edible frog, *Rana esculenta*, in the diagnosis of equine infectious anaemia.]**—*Veterinariya, Moscow.* **27,** No. 6. pp. 53-55. [In Russian.] **1904**

II. FEDOTOV, A. I. (1950). **[Haemagglutination with the erythrocytes of frogs' blood in equine infectious anaemia.]**—*Ibid.* pp. 56-57. [In Russian.] **1905**

I. D. found that a specific reaction occurred when 1 ml. diluted serum of horses infected with E.I.A. was injected i/p into the frog, *R. esculenta;* the latter exuded blood-stained mucous faeces after 30–40 min. Sera of healthy horses or horses with any other infection did not cause the reaction. The method of a direct test for agglutination between horse serum and frog r.b.c. was also described, the titres obtained in positive, negative and doubtful cases being given.

II. The serum of E.I.A. infected horses agglutinated frog r.b.c. in titres varying from 1:100 to 1:600. Serum of healthy horses had a titre of 1:10 to 1:50. Horses infected by other diseases gave a constant titre of 1:25–1:50. The method of preparing and testing was described, but the need for more research was suggested.—F.A.A.

RÖHRER, H. & MÖHLMANN, H. (1951). Weitere experimentelle Untersuchungen zur Frage der natürlichen Übertragungsweise der infektiösen Anämie der Pferde. **[Experimental research on natural transmission of equine infectious anaemia.]**—*Exp. VetMed.* **5,** pp. 6-13. **1906**

A report of experiments at the Animal Diseases Research Institute on the island of Reims to test the transmisibility of E.I.A. through the ingestion of virus-infected water and fodder. Using virus in concentration probably greater than is available naturally, the experiments had a positive outcome. Horses could also be infected by nebulization of the virus into the air close to the nostrils of the test horses.—J. EDWARDS.

MENGES, R. W., HARSHFIELD, G. S. & WENNER, H. A. (1953). **Sporadic bovine encephalomyelitis. I. The natural history of the disease in cattle.**—*Amer. J. Hyg.* **57,** 1-14. **1907**

WENNER, H. A., HARSHFIELD, G. S., CHANG, T. W. & MENGES, R. W. (1953). **Sporadic**

bovine encephalomyelitis. II. Studies on the etiology of the disease. Isolation of nine strains of an infectious agent from naturally infected cattle.—*Ibid.* 15-29. [Authors' summaries modified.] **1908**

I. Sporadic bovine encephalomyelitis is a specific and definitive disease syndrome of cattle. Calves less than a year of age are more susceptible to severe attacks than are yearling or adult cattle. It appears to be more common in the midwestern States than elsewhere, but this may be the result of less accurate reporting in regions where cases may be occurring sporadically in small herds. Clin. and pathological observations indicate that the infectious agent primarily attacks mesenchymal tissues, especially the vascular tree and serous membranes. Encephalomyelitis is not primary, but arises as an incident in a widespread invasion of mesenchymal tissues by the virus.

Minute elementary bodies may be found in tissues and exudates obtained from the carcasses of cattle that have died of the disease. Such tissues and exudates produce experimental infection in g. pigs and in chick embryos and produce in the peritoneal exudate and yolk sac respectively, elementary bodies similar in morphology to members of the psittacosis-lymphogranuloma group of viruses.

II. A transmissible agent has been detected in g. pigs and yolk sacs of developing chick embryos experimentally infected with tissue extracts obtained from 8 calves and a cow, each of which was ill with sporadic bovine encephalomyelitis. The properties of the agent placed it among visible, filtrable viruses possessing tinctorial characteristics relating them to the psittacosis-lymphogranuloma group. The appearance of specific antibodies in experimentally inoculated calves provided additional evidence that the agent is related to the disease in cattle. Additional serological studies indicated that bovine encephalomyelitis virus is antigenically related to the psittacosis - lymphogranuloma group of viruses.

PROTIN, P. (1952). Le louping-ill et sa transmission à l'homme. **[Louping-ill and its transmission to man.]**—*Thesis, Alfort.* pp. 50. **1909**

A review of the literature, with 47 references.—R.M.

I. STUART, J. E., ALLEN, R. K., SHULTZ, G., DELAY, P. D. & ROSENBERGER, A. C. (1952). **An outbreak of scrapie in California sheep.**—*Calif. Vet.* **6,** No. 2. pp. 22. **1910**

II. ANON. (1952). **Scrapie found in California sheep.**—*J. Amer. vet. med. Ass.* **121,** 455. **1911**

I. Scrapie has been diagnosed in Californian sheep for the first time. It appeared to have originated in sheep which had been imported from Canada.

II. A brief description of the disease.

—G. B. S. HEATH.

SIPPEL, W. L. (1952). **White blood cell count in hog cholera.**—*Vet. Med.* **47,** 497-501. [Author's summary modified.] **1912**

Data were presented indicating that a w.b.c. count below 10,000 per cu. ml. is indicative of swine fever provided that the history, symptoms and lesions are in agreement with the diagnosis.

Cases of pneumonia or influenza, salmonella infection or swine erysipelas did not yield w.b.c. counts likely to be confused with swine fever. Aujeszky's disease and certain diseases of piglets yield w.b.c. counts within the swine fever range.

CORONEL, A. B. & ALBIS, F. S. (1950). **Preliminary report on the attenuation of hog cholera virus by alternating passages through pigs and duck embryonated egg.**—*Philipp. J. Anim. Ind.* **11,** 127-137. **1913**

The swine fever virus had pathological effects on duck embryos as far as the fifth passage. These were mainly hyperaemia, oedema and cutaneous haemorrhages. Pigs inoculated with matrial up to the fifth passage showed evidence of virulent swine fever. Beyond the eighth passage modification of the virus took place and though thermal reactions were induced in susceptible pigs, these were not protected on subsequent exposure to virulent virus.

—D. LUKE.

GEIGER, W. & POPPE, H.-H. (1953). Weitere Untersuchungen und Versuche mit Kristall-Violett-Vakzine (KVV) bei Schweinepest. **[The crystal-violet swine fever vaccine.]**—*Berl. Münch. tierärztl. Wschr.* **66,** 6-12. **1914**

After some tests with an American and an English crystal violet vaccine, which were not quite satisfactory, the authors prepared 24 trial vaccines by using a number of viruses of varied origin, different buffering agents and crystal violet from different manufacturer sources. The best was one prepared from English virus, German crystal violet and glycol as a buffer.

This vaccine proved to be safe and incapable of infecting swine or of producing virus carriers; capable of protecting pigs against swine fever and suitable for combination with antiserum, for use in herds under immediate threat of infection. The authors advised against attempts to immunize simultaneously against

swine fever and swine erysipelas, as some interference seems to occur.—J. EDWARDS.

ANON. (1952). **Vesicular exanthema threatens a cholera serum crisis. Should we tackle hog cholera eradication now?**—*J. Amer. vet. med. Ass.* **121,** 489-491. **1915**

The present drive against vesicular exanthema might well be extended to include a programme for the eradication of swine fever from the U.S.A. Among the measures suggested are the prohibition of live non-modified virus in vaccination procedures, control of swill-feeding establishments and the disposal of all infected herds.—J. T. DONE.

ANON. (1952). **Vesicular exanthema declared a national emergency.**—*J. Amer. vet. med. Ass.* **121,** 169-170. **1916**

Formerly recognized only in California, vesicular exanthema has recently become widespread in the U.S.A. Standstill orders have been imposed on pigs in affected areas, and owners are being compensated for losses.

—C. C. BANNATYNE.

MARIOTTI, P. (1951). Sull'aureomicino-terapia nel cimurro del cane. [**Aureomycin in treatment of canine distemper.**]—*Ann. Fac. Med. vet., Pisa.* **4,** 69-76. [English and French summaries.] **1917**

In a dosage of 100 mg./day i/v for 10 days, of 100 mg./kg. *per os* for 16–20 days, aureomycin proved ineffective in all but 3 of 10 dogs affected with distemper.

—G. P. MARSHALL.

MARTIN, L. A. (1952). De quelques virus hépato-neurotropes du chien et de l'homme. Leurs points de contact. [**Hepato-neurotropic viruses of dog and man.**]—*Maroc. méd.* **31,** 630-638. **1918**

M. claimed that he obtained evidence that poliomyelitis and infective hepatitis of man, canine distemper and canine virus hepatitis, all originate from the one virus.—W. MANSI.

REAGAN, R. L. & BRUECKNER, A. L. (1952). **Studies of Newcastle disease and canine distemper viruses in puppies.**—*Vet. Med.* **47,** 513-514. **1919**

Various American egg-adapted strains of Newcastle disease virus were inoculated into 6-week-old puppies. Neutralizing antibodies were produced by the Californian strain only, but no symptoms of the disease were noted. The puppies were then challenged by inoculation with distemper virus. Although controls were kept, since the numbers in the experiment were very small and intercurrent deaths heavy, an apparently higher resistance to distemper virus on the part of Newcastle-inoculated puppies was not considered significant.—B. G. CLARKE.

MARTIN, L.-A. & HINTERMANN, J. (1952). Sur l'existence, au Maroc, d'une maladie contagieuse du chat, non encore décrite: la Myélite infectieuse. [**Infectious myelitis of cats in Morocco.**]—*Bull. Acad. vét. Fr.* **25,** 387-392. **1920**

This hitherto undescribed condition may be peracute, acute, mild, or practically occult. Lesions include perivascular infiltrations of lymphocytes or monocytes in the dorsal or ventral horns, neurone degeneration and sometimes diffuse capillary haemorrhages. The disease is thought to be caused by a virus.

—M. L. CLARKE.

SCOTT, P. P. (1952). **Incidence of feline pneumonitis in laboratory cats.**—*J. Physiol.* **118,** No. 2. pp. 35P-36P of Proceedings. O.a.g. **1921**

The symptoms observed were mainly respiratory, with a low rectal temperature. The disease was most fatal in young kittens; 12 out of 13 kittens infected when 3–5 weeks old died. The incubation period was 5–8 days, with recovery varying between 21 and 36 days. Immunity appeared to develop on recovery from a severe attack.

Experiments suggest that the primary organism is a virus of the psittacosis group—probably similar to that described by Baker [*V.B.* **14,** 1486] in America, and isolated by Hamre *et al* [*V.B.* **19,** 1527].—B. G. CLARKE.

RATCLIFFE, F. N., MYERS, K., FENNESSY, B. V. & CALABY, J. H. (1952). **Myxomatosis in Australia. A step towards the biological control of the rabbit.**—*Nature, Lond.* **170,** 7-11. **1922**

This is an account of the spread of the epizootic disease which developed amongst wild rabbits in south-eastern Australia following artificial release of the myxomatosis virus. In the summer of 1950-51, *Culex annulirostris* was thought to be the principal vector, and in the summer of 1951-52, *Anopheles annulipes*. It appears reasonably certain that the disease has established itself as a permanent enzootic infection. Since observations suggested that the lethal action of the virus in the field was less than in the laboratory, the possibility exists that the rabbit population will acquire some degree of resistance.—E. COTCHIN.

HOLZ, K. (1952). Über die Reticuloendotheliose des Gehirns bei Tieren. **[Brain lesions in a fowl infected with Newcastle disease compared with reticulo-endotheliosis in man and horses.]**—*Berl. Münch. tierärztl. Wschr.* **65,** 204-206. **1923**

Proliferation of the reticulo-endothelium of a fowl, leading to the formation of a tumour and several small foci in the brain, and some small foci in the spleen and liver, was described. The duration of the bird's illness was 5 days, whereas the lesions were chronic and pointed to an infection of fairly long standing.

—A. MAYR-HARTING.

LEVINE, P. P. & FABRICANT, J. (1952). **Efficacy of Newcastle disease vaccines under controlled conditions.** — *Cornell Vet.* **42,** 449-457. [Authors' summary modified.] **1924**

In each of two trials of the efficacy of commercial Newcastle disease vaccines 6 lots of birds were kept in individual pens of a virus isolation building. Two lots were vaccinated at one day of age with intranasal vaccine (B) and wing-web vaccine (C), respectively. Two lots were vaccinated at 4 weeks with two different brands (A and C) of wing-web vaccine, respectively. One lot was vaccinated i/m with killed vaccine D (alum-precipitated). The sixth lot served as the unvaccinated control. At 8 weeks of age all the birds, including the controls, were challenged with a virulent strain of N.D.V. intratracheally.

With the exception of one lot of impotent wing-web vaccine, the live-virus vaccines induced from fair to good protection against the challenge infection. The killed vaccine failed to protect the birds in both trials.

From 66–94% of the wing-web vaccinated birds had positive H.I. titres and, with two exceptions, resisted challenge. However the birds with the negative H.I. titres were more resistant to the virulent infection than the unvaccinated controls.

There was no relationship between the H.I. titres and resistance to challenge in the birds vaccinated by the intranasal method.

Little or no postvaccination mortality occurred except in the day-old chicks vaccinated by the wing-web method.

The authors discussed the practical aspects of the data.

I. MITCHELL, C. A. & WALKER, R. V. L. (1952). **Studies in Newcastle disease. V. Further trials with vaccine containing formalized virus incorporated with adjuvants.**—*Canad. J. comp. Med.* **16,** 409-410. **1925**

II. MITCHELL, C. A., WALKER, R. V. L. & MOYNIHAN, W. A. (1952). **Studies in Newcastle disease. VI. Field trials with formalized virus incorporated with adjuvants.**—*Ibid.* 411-414. **1926**

I. Resistance appeared to be related to the presence of haemagglutination-inhibiting antibodies. Immunity persisted in the majority of birds for 13 months.

II. Vaccination with formalin-inactivated chick embryo in saline-oil suspension caused no trouble in non-producing birds, but some laying birds were adversely affected. Serological tests and challenge showed 90% solidly immune for at least 6 months. Chicks from these birds had some resistance to N.D.V.—R. GWATKIN.

DAVENPORT, F. M. (1952). **Toxicity of NDV for mouse lungs.**—*J. Immunol.* **69,** 461-470. **1927**

The pulmonary toxicity of Newcastle disease virus in mice is due to the existing virus component of the inoculum. No multiplication of the virus could be shown.—A. SEAMAN.

QUINN, R. W., HANSON, R. P., BROWN, J. W. & BRANDLY, C. A. (1952). **Newcastle disease virus in man. Results of studies in five cases.** —*J. Lab. clin. Med.* **40,** 736-743. [Abst. from authors' summary.] **1928**

Case reports of 5 patients exposed accidentally to N.D.V. The principal clinical manifestations were malaise, conjunctivitis, ulceration of the buccal mucosa, and preauricular lymphadenopathy. The onset followed exposure within 18–24 hours. The virus was isolated from conjunctival sac washings, nasal discharges, saliva, and blood cells of Case 1, from saliva only in Case 2, from conjunctival sac washings, saliva, and urine in Case 3, and from eye washings of a patient whose contact occurred while preparing vaccine to Newcastle disease.

To the authors' knowledge this was the first time that N.D.V. has been isolated from the urine of a human patient. The virus was isolated from one patient whose illness was almost inapparent. Newcastle disease may have greater significance for man than is generally recognized.

LIU, C. (1952). **Variables in agglutination and lysis of human red cells by NDV.**—*Proc. Soc. exp. Biol., N.Y.* **81,** 646-648. [Author's summary modified.] **1929**

The vaccine (Blacksburg) strain of N.D.V., harvested from the allantoic fluid of chick embryos, after freezing at −70°C. and subsequent thawing, agglutinated and haemolysed

human O-type r.b.c. The same virus, untreated, did not agglutinate or lyse fresh human r.b.c. If, however, the r.b.c. were stored at 4°C. for 5–7 days, they were agglutinated but not haemolysed by the untreated virus.

CUNNINGHAM, C. H. (1951). **Newcastle disease and infectious bronchitis neutralizing antibody indexes of normal chicken serum.**—*Amer. J. vet. Res.* **12**, 129-133. 1930

In vitro serum neutralization tests on normal cockerels demonstrated that the serum of 99·7% of normal fowls does not contain more than 36 and 11 neutralizing doses against infectious bronchitis and Newcastle disease virus respectively.—A. H. LINTON.

WEST, J. L. (1952). **Simultaneous vaccination of chickens with laryngotracheitis and fowl pox viruses by way of the cloaca.**—*Cornell. Vet.* **42**, 316-327. 1931

Inoculation into the cloaca of a mixture of laryngotracheitis and fowl pox viruses resulted in peak reactions on the fifth and seventh days and resistance to challenge at 16 days. The earlier reaction to laryngotracheitis virus probably facilitated spread of the fowl pox virus. The histological changes produced by both viruses were described.—E. G. WHITE.

COSTA, J. A. (1952). **Tick paralysis on the Atlantic seaboard. Study of incidence during poliomyelitis season with report of a case and review of published cases.**—*Amer. J. Dis. Child.* **83**, 336-347. 1932

A summary was given of cases of tick paralysis reported in human beings in the Eastern States of the U.S.A. since 1946, and the first case was reported from Westchester County. The incidence of tick paralysis during the summer months coincides with the poliomyelitis season. Local health departments in tick-infested areas should conduct a campaign of education of the public each spring.

—W. R. BETT.

BARDACH, M., CROS-DECAM, J. & GORET, P. (1947). Recherches sur la rougeole. Essais de transmission au chien. **[Attempts to transmit measles to dogs.]**—*C.R. Acad. Sci., Paris.* **225**, 1036-1038. 1933

The authors claimed to have produced symptoms of measles in dogs by injecting them s/c with blood from an infected child. Serial passages were made in dogs over a period of 8 years. Experimentally infected dogs became immune. *In vitro* infected blood lost its infectivity after having been in contact with immune dog serum for 15 hours.—E.G.

EVANS, E. A., JR. (1952). **Biochemical relationship of viruses with cells.**—*Ann. N.Y. Acad. Sci.* **54**, 909-925. 1934

The composition of plant and animal viruses was described. Viral reproduction and the origins of viral components were discussed, particular reference being made to experiments with *Bact. coli* phages and substrates labelled with isotopes.—IAN DAVIDSON.

COHEN, S. S. (1952). **The enzymes of the host cell as a requirement for virus synthesis.**—*Ann. N.Y. Acad. Sci.* **54**, 902-908. 1935

A discussion of the mode of action of bacteriophage on the enzyme system of the host. Bacteriophage-induced changes in the synthesis of ribose and desoxyribose nucleic acids were described in detail.—IAN DAVIDSON.

JOKLIK, W. K. (1952). **The effect of phage infection on the metabolic activity of the host cell.**—*Brit. J. exp. Path.* **33**, 368-379. 1936

When *Bact. coli* was infected with the phages T1 and T2, the oxidation of pyruvate, succinate, acetate, alanine and glycine was inhibited, while that of glucose, lactate, formate, fumarate and malate was not affected. Anaerobic carbon dioxide liberation from glucose and pyruvate was inhibited, but the hydrogenase-nitrate reductate system was unaffected. The adaptation towards oxidation of acetate, alanine and lactote was completely inhibited, but on the other hand the formic hydrogen lyase system was greatly stimulated. These findings were discussed. [See also *V.B.* **23**, 126.]

—L. M. MARKSON.

HALL, E. A., KAVANAGH, F. & ASHESHOV, I. N. (1951). **Action of forty-five antibacterial substances on bacterial viruses.**—*Antibiot. & Chemother.* **1**, 369-378. [Abst. in *Bull. Hyg., Lond.* **27**, 366. (1952), copied *verbatim*. Signed: L. P. GARROD.] 1937

The action of various antibacterial substances on phages was tested by applying to the surface of an agar plate inoculated with a mixture of bacteria and phage a filter paper disc dipped in a solution of the substance. The various appearances so produced are illustrated; antiphage without antibacterial action was indicated by a zone of confluent bacterial growth surrounding the disc. Sixty phages (9 staphylococcus, 16 coli, 11 cholera and the remainder embracing 12 other bacterial species) were used and 45 antibacterial substances, of which 36 were antibiotics and 9 synthetic quinones. Polymyxin B (most active), viomycin and also *p*-toluquinone and 5 other

quinones were the only substances showing antiphage action, each inhibiting from 1 to 7 phages only, in a concentration of 0·5 to 1·0 mgm./ml. Activity against free phage was also tested by mixing a suspension of phage with a solution of the substance, incubating overnight, and titrating surviving phage. This test was applied to 34 of the substances and 10 phages, and revealed activity in a greater number of the former (22): quinones were most active, but active antibiotics not possessing a quinone structure were patulin, subtilin, penicillic acid, polymyxin B and streptomycin. (Effective concentrations were again high, and many of these substances have a high mammalian toxicity, but in view of the possible application of such findings to an attack on pathogenic viruses, it is pointed out that "since antiphage action and toxicity for other organisms are not necessarily linked, antiphage-active nontoxic compounds could be sought among relatives of the antiphage-active but toxic substances.")

FISCHER, G. (1952). **A phagicidal and virucidal agent in maple fruit (Acer platanoides L.) preparations. Investigations with *E. coli* bacteriophage and vaccinia virus.**—*Acta path. microbiol. scand.* **31**, 433-447. [In English. Abst. from author's summary.] **1938**

A study of a phagicidal and viricidal compound extracted from the fruits of the Norway maple (*Acer platanoides*); F. named the substance "acerin". In a cell-free, absolutely clear and freshly filtered solution it destroyed a *Bact. coli* phage in 5 min. With concentrations of acerin permitting free and uninhibited growth of its host cell (*Bact. coli*), the phage was materially reduced after 15 min. and destroyed after 30 min. This phagicidal effect of acerin was exerted in the presence of the host cell and even when the host cell had been contaminated with phage for 2 hours. Acerin also destroyed vaccinia virus in 5 min., but its effect on the *Staphylococcus* Twort phage was much less pronounced. Administered s/c to mice and rabbits, it proved non-toxic.

HALAWANI, E., EL DINE, K. Z. & EL FIKI, A. Y. (1952). **Q-fever in Egypt.**—*J. Egypt. med. Ass.* **35**, 339-346. [Abst. from abst. in *Trop. Dis. Bull.* **49**, 1038-1039. (1952).] **1939**

The authors gave a short account of Q fever and remarked on the absence of reports of it in Egypt. They stated that Taylor *et al.*, in work as yet unpublished, obtained positive c.f. reactions for Q fever in 16 of 26 sheep and 15 of 25 goats in Egypt. In human beings, there were more positives and higher titres in those under 5 years and also in females. Taylor *et al.* had also recovered *R. Burneti* from *Hyalomma dromedarii* of camels and from *H. excavatum* of Sudanese bulls in Cairo.

The present authors carried out 500 c.f. tests on animals and human beings in Cairo. The results were given in a table. Of 200 cows and buffalo cows 22 were positive in titres from 1:32 to 1:128. Of 15 goats and 217 sheep, 4 and 14 respectively gave positive reactions. Of 77 human sera 11 gave positive reactions.

GIROUD, P., LE GAC, P. & LE HÉNAFF, A. (1952). La diffusion de la fièvre Q en Oubangui-Chari est liée aux mouvements des troupeaux. **[Movements of herds and spread of Q fever in Ubangi-Shari.]**—*C.R. Acad. Sci., Paris.* **234**, 1236-1238. **1940**

A comparison of two villages—one situated on a direct route, the other away from it—suggested that Q fever in Ubangi-Shari is spread by movements of herds.—W. R. BETT.

AGRIMI, P. & EMDIN, R. (1952). Contributo all'indagine epidemiologica sulla febbre "Q" in Toscana. Ricerche sulla presenza di anticorpi devianti da Coxiella burneti nel siero di ovini residenti nelle province di Pisa e Livorno. **[Q fever in Tuscany. Research on antibodies in the serum of sheep from the Pisa and Leghorn provinces.]**—*Zooprofilassi.* **7**, 385-390 & 393-397. [Spanish summary.] **1941**

A complement-fixation titre of 1:8 is to be considered positive. The most reliable technique requires—according to the authors—inactivation of sera at 56°C. for 30 min. and sensitization at 37°C. for one hour.—I. MARTINI.

MALLOCH, R. A. & STOKER, M. G. P. (1952). **Studies on the susceptibility of *Rickettsia burneti* to chemical disinfectants, and on techniques for detecting small numbers of viable organisms.**—*J. Hyg., Camb.* **50**, 502-514. **1942**

Of various common lab. disinfectants tested against a Henzerling strain of *R. burneti*, 1% lysol at 37°C. for 3 hours was the most active. The advantage of blind sub-passages through eggs over mouse and g. pig inoculations for the detection of small numbers of rickettsia was discussed.—E. A. HIRSCH.

DRYSDALE, A. D. & KIRK, R. (1952). **Typhus fevers in the Anglo-Egyptian Sudan, II.**—*J. Trop. med. (Hyg).* **55**, 49-50. [Abst. from authors' summary.] **1943**

Fairly extensive investigations have shown

that fevers of the typhus group are uncommon in the Sudan—or at least difficult to identify—and have not recently been prevalent in epidemic form. Occasional cases which have been noted from time to time include epidemic louse-borne typhus fevers, tick-typhus (in Equatoria), and one or two anomalous cases which are difficult to explain. The Weil-Felix reaction has so far failed to prove the existence of typhus infections in rodents.

The authors described two cases which were considered to be sporadic human infections with murine typhus.

PYL, G. (1951). Über die Chloroformbehandlung von Gehirnmaterial bei neurotropen Virusarten. Ein Beitrag zur Kenntnis der Virus-Inaktivierung. **[Chloroform treatment of brain material infected with neurotropic viruses.]**—*Exp. VetMed.* **5**, pp. 1-5. **1944**

The viruses of F. & M. disease and mouse poliomyelitis were unaffected by treatment of infected brain tissue with chloroform. The viruses of Borna disease and Aujeszky's disease did not withstand treatment of tissues with lipoid solvents (acetone, chloroform).—E. G. WHITE.

I. MELCZER, M. (1951). Primulinpositive und primulinnegative Virusarten. Die Möglichkeit von Differenzierung der Virusarten im Fluoreszenzlicht. **[Primulin-positive and primulin-negative viruses. The possibility of differentiating viruses by fluorescence.]** — *Acta med., Budapest.* **2**, 205-212. [In German.] **1945**

II. MELCZER, M. (1951). Beiträge zur Primulinfärbbarkeit der Virusarten. **[Observations on the primulin staining of viruses.]**—*Ibid.* 213-216. [In German.] **1946**

I. Virus material from various skin diseases was examined by the primulin-fluorescence method. The viruses were found to be either primulin-positive or primulin-negative. Those fluorescing after primulin treatment were the viruses of herpes simplex, variola and lymphogranuloma inguinale, the primulin-negative ones were verruca, condyloma acuminatum, herpes zoster and varicella. Molluscum bodies fluoresced after treatment with fat solvents. Primulin affinity was stated to depend on the chemical structure of the virus. The diagnostic value was discussed.

II. Three chick-embryo-adapted influenza strains, two of type B and one of type A were examined by the primulin-fluorescence method. The type A strain was primulin-positive, whereas the other two were primulin-negative. M. recommended this method for the typing of new strains.—E.G.

BANG, F. B. (1952). **Cellular pathology of virus infections as seen with the electron microscope.**—*Ann. N.Y. Acad. Sci.* **54**, 892-901. [Author's summary modified.] **1947**

Some viruses, the pox viruses in particular, are found at first dispersed through the cytoplasm. The pox viruses and herpes seem to have a marked effect on the osmotic properties of the cytoplasm, perhaps decreasing the escaping tendency of water. Ballooning and destruction of the mitochondria occur subsequently. The influenza and Newcastle disease viruses stimulate the formation of surface filaments and virus is presumably liberated into the allontoic fluid as a result, before cell destruction sets in. Encephalitis destroys the cytoplasm itself, apparently replacing the ground substance at the spot. Admittedly, all three effects may vary with different cell types, as is apparent in Newcastle disease virus infections.

HORSFALL, F. L., JR. (1952). **Factors concerned with viral proliferation** *in vivo*.—*Ann. N.Y. Acad. Sci.* **54**, 926-935. **1948**

A review of factors influencing viral multiplication and host susceptibility, including antibodies, hormones, genetic and nutritional factors, interference of other viruses, and chemotherapeutic substances.—IAN DAVIDSON.

SABIN, A. B. (1952). **Genetic, hormonal and age factors in natural resistance to certain viruses.** — *Ann. N.Y. Acad. Sci.* **54**, 936-944. [Author's summary modified.] **1949**

Natural resistance depends on changes in the host which affect different viruses in different ways. The genetical constitution of the host is important in natural resistance by determining the level of viral multiplication as well as the vulnerability of the tissues. The mechanism of inherited resistance to at least one mammalian virus (yellow fever, 17 D) is Mendelian in character and depends on a single pair of genes which depress the level of viral multiplication. Evidence indicates that special cellular vulnerability of the host, influenced either by age or genetical constitution, can eliminate the resistance gained from inheritance of the factor which holds viral multiplication at a low level. Variants of the same virus may abolish the inherited resistance of the host either by possessing or developing the capacity to kill at lower levels of multiplication, or by overcoming the barrier to higher levels of multiplication imposed by the inherited factor.

Hormones, *e.g.*, cortisone, and changes produced in the tissues by age also alter the response of the host to certain viral infections. Here, too, resistance has occasionally been correlated with low levels of viral multiplication, and susceptibility with high levels.

See also absts. **1960** (transplacental passage of influenza and rickettsia antibodies); **2148** (report, Australia); **2149** (report, Denmark).

IMMUNITY

HAUROWITZ, F. (1952). **The mechanism of the immunological response.**—*Biol. Rev.* **27,** 247-280. [Author's summary copied *verbatim.*] **1950**

Proteins display two types of specificity. One of them, the species-specificity, is based on a definite number and sequence of amino-acids in the peptide chain. This type of specificity is not altered by external factors. The second type of specificity depends on differences in the shape of the globular protein molecules. Antigens modify this shape and cause the formation of antibodies, i.e. spatially modified serum globulins.

The formation of the normal serum globulins and antibodies from their precursors, the amino-acids, is a slightly endothermic reaction which is catalysed by non-specific enzymes. It takes place in the spleen, the bone marrow, the liver and in other organs.

Protein synthesis *in vivo* is a two-phase reaction. Its first phase consists probably in the replication of a monomolecular expanded peptide layer which acts as a template, and is held in the expanded state by combination with nucleic acids. It is assumed that the amino-acid residues of the template peptide chains adsorb identical amino-acids from the cellular fluid, and that a non-specific enzyme catalyses the formation of peptide bonds between the adsorbed amino-acids. In the second phase of protein synthesis, the replica folds to give a three-dimensional globular protein molecule.

Experiments with tracer-labelled antigens reveal the presence of antigen in reticulo-endothelial and lymphatic cells. Fractionation of the homogenized liver or spleen by high-speed centrifugation and analysis of the fractions shows that the bulk of the antigen is bound by the cytoplasmic granules (microsomes and mitochondria), and that it is kept for many months in the large granules (mitochondria).

Antibody molecules differ from normal serum-globulin molecules by their shape, which is complementarily adapted to that of the polar determinant groups of the antigen molecules. Owing to this complementariness the combining group of the antibody molecule can approach very closely the determinant group of the antigen molecule, so that strong mutual attraction between the antigen and the homologous antibody molecules results.

Since antibodies have the same amino-acid composition as normal serum globulins, it is assumed that the antigen molecules interfere only with the second phase of globulin synthesis, with the folding of the peptide chains, and that this second phase of the biosynthesis of serum globulins takes place in the cytoplasmic granules of the liver, the spleen and other organs.

TALIAFERRO, W. H. & TALIAFERRO, L. G. (1952). **The role of the spleen and the dynamics of hemolysin production in homologous anamnesis.**—*J. infect. Dis.* **90,** 205-232. **1951**

Experiments on specific anamnestic responses to sheep's red blood cells in rabbits indicate that peak antibody titres after both the initial and anamnestic rise are due mainly to the activity of the spleen after a single inj. of antigen and are due relatively more to the activity of non-splenic sources after repeated inj. of antigen. Antibody producing sites appeared to form a certain amount of antibody and then to pass into an inactive or refractory phase.—A. ACKROYD.

AXELROD, A. E. (1952). **Role of the vitamins in antibody production.**—*Nutr. Symposium Ser.* No. 5. pp. 27-38. [Author's summary copied *verbatim.*] **1952**

The available evidence would indicate that certain B vitamins, notably pyridoxine, pantothenic acid and pteroyl-glutamic acid, play a significant role in antibody synthesis. There is considerable basis for linking pyridoxine to amino acid metabolism and its participation in antibody production may be related to this function. A corresponding mechanism for the action of pantothenic acid has not yet been demonstrated. A relationship between pantothenic acid and peptide bond formation is suggested by the observation of Chantrenne that Coenzyme A, a compound which contains pantothenic acid, is involved in the synthesis of hippuric acid.

The ability to control antibody production by regulating the vitamin intake should be a

useful tool in the unravelling of the mechanisms of antibody synthesis. Since the antibodies represent a class of specialized proteins, such studies would yield information regarding the processes of protein anabolism in general. The fact that the measurement of antibodies is greaty facilitated by the application of specific immunological procedures renders them particularly suitable for studies of protein synthesis.

HANAN, R. (1952). **The effect of ultra-violet irradiation on the reactivity of antibody. I. Some observations on the quantitative precipitin reaction and passive anaphylaxis.**—*J. Immunol.* **69**, 41-61. **1953**

A quantitative study of the effect of ultraviolet radiation on isolated globulin fractions revealed changes in antibody reactivity (progressively increased antibody/antigen ratio in the specific precipitates), which do not occur with heat or photo-oxidation.—W. R. BETT.

EISLER, M. (1951). Versuche über Konglutination. [**Experiments on conglutination.**]—*Z. ImmunForsch.* **108**, 553-565. [Abst. in *Bull. Hyg., Lond.* **27**, 384. (1952), copied *verbatim.* Signed: D. J. BAUER.] **1954**

A reaction of the conglutination type is described in which bacteria treated with rabbit antiserum are agglutinated by various animal sera. Typhoid bacilli were treated for one hour with diluted rabbit antiserum which had been heated until its agglutinin had been destroyed, and were then washed in saline. When the bacilli were then treated with active and inactivated guineapig, horse and bovine serum they were agglutinated. The addition of guineapig complement restored the agglutinating power of bovine serum which had been diluted until it no longer produced agglutination when used alone; inactivated complement had no such effect. The results of a number of experiments are described, and it is concluded that bacilli treated with antibody (other than horse immune serum) are agglutinated by complement and bovine serum more strongly than untreated bacilli. Sheep red cells were treated with antiserum in which the agglutinin had been destroyed by formalin or by heating for one hour at 75°C.; the cells were agglutinated and lysed by the addition of bovine serum and guineapig complement but not by either component alone. In similar experiments with unheated antiserum diluted beyond the lytic end-point sheep red cells were lysed in the presence of guineapig complement and bovine serum but were not agglutinated. Agglutination was also produced when sheep and horse complement were used. Certain qualitative differences in the occurrence of lysis and agglutination were noted when red cells and complement from different species and even from different animals of the same species were used.

CHEN, T. H. (1952). **Studies on immunization against plague. IV. Method of the hemagglutination test and some observations on the antigen.**—*J. Immunol.* **69**, 587-596. [Author's summary modified.] **1955**

A haemagglutination test has been developed for *Past. pestis.* The antigen is contained in old broth cultures, in extracts of killed and dried organisms and in alcohol-precipitated envelope antigens, but not in the protein fractions soluble in 0·25 saturation of ammonium sulphate solution or in those isolated by precipitation of soluble extracts by amm. sulph. at a saturation of 0.3 or higher. The crude antigen has a low nitrogen content and is likely to be a polysaccharide.

The use of the haemagglutination test or of the inhibition of haemagglutination may be valuable in ascertaining the identity of plague antigens. The haemagglutination antigen appears not to play an important role as a protective antigen in plague.

CAMERON, H. S. (1949). **The role of plasma fractions in passive immunization and treatment.**—*Amer. J. vet. Res.* **10**, 265-267. **1956**

A further report [see also *V.B.* **19**, 279] on the immunological use of the serum globulin fraction gathered from slaughter animals, the histories of which were unknown. Serum globulin from slaughter pigs conferred some resistance to swine fever but was not comparable to hyperimmune serum when tried out in a group of 71 pigs, divided into various experimental sections. In mice the protection afforded against *Pasteurella multocida* infection was of little use although bovine serum globulin was more effective than that of sheep. Much the same results were found with *Salmonella choleraesuis* and *Brucella suis* infections in mice. No protection was afforded against *Clostridium welchii.* C. concluded that serum globulin may have some value in low grade infections.—W. R. KERR.

STAMP, J. T. & STEWART, J. (1953). **Haemolytic anaemia with jaundice in sheep.**—*J. comp. Path.* **63**, 48-52. [Authors' summary modified.] **1957**

Two outbreaks of haemolytic jaundice amongst sheep grazing (a) kale and (b) rape were described. The clinical, pathological and

biochemical examination suggested that the condition may be allied to puerperal haemoglobinuria of cattle.

CRONIN, M. T. I. (1953). **Exchange transfusion in the foal.**—*Vet. Rec.* **65,** 120-123. **1958**

An account of the apparatus and procedure for exchange transfusion for the treatment of haemolytic disease in new-born foals.

—E. A. GIBSON.

KELLNER, A. & HEDAL, E. F. (1953). **Experimental erythroblastosis fetalis in rabbits. I. Characterization of a pair of allelic blood group factors and their specific immune isoantibodies. II. The passage of blood group antigens and their specific isoantibodies across the placenta.**—*J. exp. Med.* **97,** 33-49 & 51-60. [Authors' summaries modified.] **1959**

I. A pair of blood group factors, designated G and g, was identified in rabbits by serological means. One or the other or both of them were regularly present in the r.b.c. of each of a large number of mongrel and inbred rabbits. These factors were not demonstrable in other tissue cells or in the body fluids. They were capable of stimulating the formation of specific immune isoantibodies when repeatedly injected into appropriate rabbits. In most instances both agglutinating and coating antibodies to the G or g factors were present in a given antiserum. The coating antibodies—which did not act as true blocking antibodies—were detected by means of an antiglobulin test (Coombs test), or by means of specific cells modified by the action of trypsin. The antibodies were heat-stable and were active over a wide temp. range, and under suitable conditions they proved to be potent haemolysins and were also capable of fixing complement. The characteristics of the antigens and antibodies of the rabbit G-g system bear a striking resemblance to those of the Rh-Hr system of man.

II. Female rabbits became immunized during pregnancy to the rabbit blood group factors G or g in 5 out of 10 instances in which the r.b.c. of the foetuses carried one of the factors absent in the dam. Antibodies so produced were of low titre and disappeared in all cases within 6 weeks after the birth of the litter. Repeated pregnancies did not result in additive increases in titre.

Antibodies to the G-g factors, whether produced by the inj. or r.b.c. or by pregnancy, crossed the placenta readily from dam to foetus and were found at birth (and before suckling) associated with the r.b.c. red and in the serum of the foetuses. The rabbit placenta appeared to be equally permeable to the agglutinating and coating antibodies.

The implications of these findings and their relation to the pathogenesis of erythroblastosis fetalis were briefly touched upon.

GRASSET, E., DE WATTEVILLE, H. & WIRTH, J. (1952). Passage transplacentaire des anticorps grippaux et antirickettsia et titrage comparatif de ces derniers dans la circulation maternelle et foetale. **[Transplacental passage of influenza and rickettsia antibodies.]**—*Schweiz. Z. allg. Path.* **15,** 484-490. [In French.] **1960**

A comparative study of influenza antibody titres in 224 mothers and their new-born babies demonstrated the occurrence of transplacental passage. Transplacental passage of rickettsia antibodies is more limited than in pregnant rabbits.—W. R. BETT.

FAGRAEUS, A. (1952). **Rôle of ACTH and cortisone in resistance and immunity.**—*Acta path. microbiol. scand.* Suppl. No. 93. pp. 20-28. Discussion: pp. 86-92. [In English. Abst. from author's summary] **1961**

The inhibiting effect in allergic conditions and the depressing activity in resistance, of ACTH and cortisone, recorded in a great number of clinical reports, seem to have been confirmed in most animal experiments. Some data suggest that the adrenal cortical hormones exert their effect on a stage in immunity preceding the real synthesis of antibody protein, rather than that they influence this process. The possibility that cortisone alters the union of antigen and antibody or the reactivity of the tissue to the antigen-antibody complex is regarded as less likely.

CORNFORTH, J. W. & LONG, D. A. (1953). **Influence of carbohydrate metabolism on bacterial allergy. Its relation to cortisone desensitization.**—*Lancet.* **264,** 160-164. **1962**

The desensitizing actions of growth hormone and of cortisone are due to different synergistic mechanisms. Growth hormone blocks hexokinase activity, and under its influence the body relies for its energy more on glycogen breakdown, associated with glucose-1-phosphate formation.—W. R. BETT.

ERASMUS, J. F. P. & BIRCH, D. A. (1952). **Allergic reaction to dextran: case history report.**—*S. Afr. med. J.* **26,** 945-946. [Abst. from authors' summary.] **1963**

A case report of a severe allergic reaction in a human volunteer following the i/v administration of 60 ml. dextran. Some observations on allergenic and antigenic reactions reported

in the literature were reviewed, and it was suggested that greater caution should be exercised in the use of dextran.

CROXATTO, O. C. (1952). **The failure of histamine to reproduce the Arthus phenomenon.**—*Johns Hopk. Hosp. Bull.* **90,** 439-445. [Author's conclusions modified.] **1964**

In view of the widespread belief that histamine is the substance responsible for the phenomenon of anaphylaxis, large amounts of histamine diphosphate were injected into the skin of rabbits and guinea pigs in an attempt to reproduce one of the characteristic anaphylactic reactions—the Arthus phenomenon, but nothing resembling an Arthus phenomenon resulted.

See also absts. **1803-1806** (B.C.G.); **1814** (swine erysipelas); **1816-1817** (pasteurellosis); **1831-1832** and **1836** (brucellosis); **1881-1889** (F. & M. disease); **1913-1914** (swine fever); **1924-1926** and **1929-1930** (Newcastle disease); **1978** (*Trichinella*).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

FRISSON. (1952). La lutte contre l'hypodermose des bovidés, ou varron, en France. **[Control of warble flies in France.]**—*Bull. Off. int. Epiz.* **38,** May. pp. 620-637. [English summary.] **1965**

Dressing of warble-infested animals is compulsory in France. Paradichlorobenzene ointment is extensively used with good results. Spraying with insecticides does not prevent oviposition on the limbs.—J.D.

MUMA, M. H., HILL, R. E., HIXSON, E. & HARRIS, L. (1952). **Control of sheep-ticks on feeder lambs.**—*J. econ. Ent.* **45,** 833-838. [Abst. from authors' summary.] **1966**

Melophagus ovinus infestation [not "sheep ticks" as in title. The term "sheep tick" is used incorrectly and misleadingly by some for the "ked", *M. ovinus*.] on feeder lambs was adequately sampled by counting the keds exposed along 10 evenly spaced 12-inch partings of the wool on each side of the animal. Dipping was more efficient than pen-spraying or ribbon-spraying; dusting seemed more effective than spraying but inferior to dipping. Attempts to compare insecticidal efficiencies failed. Wt. gain differences between infested and clean sheep could not be demonstrated.

BRANDER, G. C., PAGE, K. W., STONES, L. C. & JOLLY, D. W. (1953). **Treatment of lambs for the control of the tick** (*Ixodes ricinus*).—*Vet. Rec.* **65,** 137-139. [Authors' summary modified.] **1967**

Various preparations and methods for controlling ticks on young lambs were tested during the seasons 1947-49. The dipping and spraying of very young lambs was not practised because of the difficulties of labour and transport. A derris dusting powder did not give sufficient residual protection, while greasy salves were difficult to apply and caused blistering of the skin and some "mismothering".

The best practical results were obtained with a liquid emulsion cream containing 2·5% benzene hexachloride (0·3% gamma BHC) applied with a sponge to the ears, axillae and thighs of the new-born lamb. This was simple to apply and gave protection for 2–3 weeks, the treated lambs thriving and remaining free from infected tick bites and skin abscesses.

SEDDON, H. R. (1951). **Diseases of domestic animals in Australia. Part 3. Tick and mite infestations.** Department of Health, Australia. Service Publication (Division of Veterinary Hygiene) No. 7. pp. 200. **1968**

This is one of the series of survey monographs S. has prepared. [For earlier publications of this series see *V.B.* **19,** 1542; **21,** 2652; **22,** 158 & 1051 and **23,** 2042.]

An account is given of the cattle tick (*Boophilus microplus*) with detailed notes on historical and other aspects of its introduction and spread in Australia, and the various treatment and legislative measures concerned with control. The paralysis tick (*Ixodes holocyclus*) and the disease seen in animals on which it engorges are dealt with in detail and there is a discussion on treatment and control including the preparation of antitoxic serum. Other ticks, native and introduced, are briefly mentioned.

The section on mites deals with mange in domestic animals and it is noted that the fox and the wombat (a marsupial) may die from sarcoptic mange (*Sarcoptes scabiei canis*). The itch mite of sheep (*Psorergates ovis*), until recently recorded from Australia only, but recently in the U.S.A. [*V.B.* **22,** 2868], is described and illustrated and there are photographs of infested sheep. The trombidid mites are discussed with particular attention to *Trombicula sarcina,* the cause of "black soil itch" in sheep.

Other animals harmful to domestic livestock are discussed, dingoes, wild dogs, foxes, wild pigs, certain marsupials, also birds, reptiles and toads, and among invertebrates, ants, bees, beetles, caterpillars, leeches, locusts

(grasshoppers), spiders and the poisonous larvae of the sawfly (Platypsectra interrupta).

There are numerous illustrations and maps indicating geographical distribution and an alphabetical index and references are given.
—H. McL. Gordon.

Lucker, J. T. & Sause, M. P. (1952). **The occurrence of demodectic mites, *Demodex folliculorum*, in the internal tissues and organs of the dog.**—*N. Amer. Vet.* 33, 787-796. 1969

D. folliculorum was isolated from the superficial lymph nodes of the head of a 10-month-old bitch, which had had demodectic mange. The authors discussed previous reports of the recovery of *D. folliculorum* from the lymph nodes and other organs.—D. W. Jolly.

McClelland, R. B. & McClelland, F. E., Jr. (1952). ***Pneumonyssus caninum* in a dog in western New York.**—*Cornell Vet.* 42, 337-338. 1970

P. caninum was recovered from the nostrils of a 10-year-old dog which had been affected with an intermittent vertigo.—D. W. Jolly.

Guilhon, J. (1952). Gale épidermoptique de la poule. [**Mange in the fowl caused by *Epidermoptes bilobatus*.**]—*Bull. Acad. vét. Fr.* 25, 83-86. 1971

From a series of 10 cases observed between 1943 and 1946 G. concluded that mange of the head, comb and wattles caused by *E. bilobatus* is not uncommon in fowls. Differential diagnosis between favus and mange may be quite difficult.—J.D.

Guilhon, J., Euzéby, J. & Obry, J. (1952). Une nouvelle affection cutanée parasitaire, chez les oiseaux de volière. [***Neocheyletiella* spp. causing depluming mange in cage birds.**]—*Bull. Acad. vét. Fr.* 25, 167-168. 1972

A brief note on the finding of cheyletid mites, probably *Neocheyletiella* spp., associated with a depluming mange in 8 canaries and a Japanese nightingale. Treatment with benzene hexachloride was beneficial.—M. L. Clarke.

See also absts. 1868 (*Phlebotomus* as vector of leishmaniasis); 1870 (*Hyalomma* transmitting *Theileria*); 2148 (report, Australia).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

Krull, W. H. & Mapes, C. R. (1952). **Studies on the biology of *Dicrocoelium dendriticum* (Rudolphi, 1819) Looss, 1899 (Trematoda: Dicrocoeliidae), including its relation to the intermediate host, *Cionella lubrica* (Müller). VI. Observations on the life cycle and biology of *C. lubrica*.**—*Cornell Vet.* 42, 464-489. [Abst. from authors' summary. For part V, see *V.B.* 23, 1612.] 1973

C. lubrica is ubiquitous, but it has preferred habitats which may vary according to season: the preferred foods in nature appear to be dead or drying vegetation. Besides *D. dendriticum*, parasites observed in this species were *Muellerius minutissimus*, a protostrongylid lungworm,and *Panopistus pricei*, a trematode parasite of the short-tailed shrew. Structures suggestive of sporozoa were encountered in many specimens. It was postulated that snails which hatch late in the summer may possibly survive two winters.

Lurie, H. I., de Meillon, B. & Stoffberg, N. (1952). **Experimental bilharziasis in animals. I. Early diagnosis of bilharziasis.**—*S. Afr. med. J.* 26, 1005-1008. 1974

Monkeys experimentally infested with *Schistosoma mansoni* and *S. bovis* had positive c.f. reactions after 3 weeks and eosinophilia after 6 weeks. The eosinophilia appeared in unisexual infections and hence egg-laying was not the primary cause.—Jas. G. O'Sullivan.

Bensted, H. J. & Atkinson, J. D. (1953). **Hydatid disease. Serological reactions with standardised reagents.**—*Lancet.* 264, 265-268. [Authors' summary modified.] 1975

A technique employing accurately standardized reagents for the serological diagnosis of hydatid disease was described. In a series of 49 human cases where the exact diagnosis was made at surgical operations, 20 non-hydatid cases gave negative complement-fixation and i/d reactions, and 28 of the 29 proved cases gave positive serological reactions, with a slight advantage to the complement-fixation test (27 were positive to the c.f. test and 25 to the Casoni test).

Ryazantsev, V. F. (1952). [**Longevity of larvae of *Strongyloides spp.* in soil.**]—*Veterinariya, Moscow.* 29, No. 5. pp. 45. 1976

Tests on *Strongyloides* spp. in the U.S.S.R. under conditions of a temperate zone disclosed that at an average air temperature of 13·6°C. eggs hatched in 16 days in rich black soil and in 18 days in loam; the larvae lived 32 and 26 months respectively in these conditions. Immersion of eggs for one hour in a saturated solution of common salt, presumably at room temp., failed to prevent their development.—F.A.A.

POOLE, J. B. (1952). **A survey of the incidence of trichinosis in rats in B.C.**—*Canad. J. comp. Med.* **16**, 291-293. **1977**

Trichinella spiralis is widespread in coastal areas of British Columbia. Incidence in piggery rats was 21·7 as compared with 2·6 in rats from other sources. The overall incidence rate was 5·8%.—R. GWATKIN.

STONER, R. D. & HALE, W. M. (1952). **Effect of cobalt^{60} gamma radiation on susceptibility and immunity to trichinosis.**—*Proc. Soc. exp. Biol., N.Y.* **80**, 510-512. **1978**

In mice subjected to cobalt^{60} gamma radiation an increase in susceptibility and destruction of active immunity to *Trichinella* infestation were demonstrable.—D. LUKE.

WHITE, E. G. & CUSHNIE, G. H. (1952). **Nutrition and gastro-intestinal helminths in sheep on hill grazing: the effect of a dietary supplement on faecal worm-egg counts, worm burden, body-weight and wool production.**—*Brit. J. Nutr.* **6**, 376-386. [Authors' summary modified.] **1979**

Half of a flock of 50 Blackface ewes on hill grazing, receiving a daily suppl. of 1 lb. of a mixture of one part ground oats and two parts linseed-cake meal, gave wool yields significantly more than animals of the other half, which received no suppl. No significant effect on body wt., worm burden or weekly faecal worm-egg counts was observed.

Lambs of this flock of ewes, given access to the suppl. from the time of birth and receiving increasing amounts up to 1 lb. daily after weaning, had reduced faecal worm-egg counts, smaller seasonal rises in worm-egg production and highly significant increases in body wt. and wool production as compared with lambs not receiving the suppl.

Throughout the period of the experiment, which lasted for 2 years with the ewes and 18 months with the lambs, faecal worm-egg counts and total worm counts were low and no signs of clin. helminth infestation were observed.

TODD, A. C. (1952). **Control of strongyle parasites in horses.**—*Bull. Ky agric. Exp. Sta.* No. 582. pp. 22. **1980**

The dosage rates of phenothiazine for horses, and the interval between the dosage were studied in relation to the control of strongyle infestation on Thoroughbred stud farms in Kentucky.

T. recommended the administration of a 2 g. dose of phenothiazine daily, in the food, for the first 21 days of each month. While this treatment may take several months to reduce a heavy established strongyle infestation, it prevents contamination of pasture and subsequent re-infestation.—D. W. JOLLY.

TETLEY, J. H. (1953). **Inhibition of populations of *Haemonchus contortus* in sheep fed on white clover (*Trifolium repens*) high in lotaustralin.** [Correspondence.]—*Nature, Lond.* **171**, 311. **1981**

After demonstrating that potassium cyanide would kill some trichostrongylid infective larvae *in vitro*, T. grazed sheep on 3 different fields, one of New Zealand certified pedigree clover, one of red clover and one of cocksfoot. A dose of 2,000 infective larvae of *H. contortus* was given to the sheep on each paddock and significantly fewer worms developed in the sheep on the first paddock. This was considered referable to the hydrogen cyanide content of these plants, the plants growing on the other two fields containing little or no cyanide. [See also MELVILLE, J. *et al.*, *V.B.* **12**, p. 509.]

—T. E. GIBSON.

GOLDBERG, A. (1952). **Experimental infection of sheep and goats with the nematode lungworm, *Dictyocaulus filaria*.**—*Amer. J. vet. Res.* **13**, 531-536. **1982**

After experimental infestation, larvae were first recovered from the faeces of lambs 32–57 days after infection, and continued to be recovered for an average of 45 days. Adult sheep which had never been exposed to infestation were not nearly as susceptible to infection as similarly infected lambs. Symptoms develop as early as 19 days after infection and continue for an average of 43 days.—G. B. S. HEATH.

SOLIMAN, K. N. (1952). **The clinical manifestations of parasitic bronchitis in cattle with a note on the epidemiology with special reference to adults.**—*Vet. Rec.* **64**, 589-594. [Abst. from author's summary.] **1983**

S. recorded two distinct forms of husk: the typical and an atypical form.

The time which elapses between the first appearance of symptoms and the detection of larvae in the faeces can exceed 20 days. A negative result of an examination of faeces for larvae is not a reliable indication of freedom from infestation.

S. discussed control measures.

CAVIER, R. & SAVEL, J. (1952). Étude des conditions de vie de l'ascaris du porc, Ascaris lumbricoides Linné 1758, hors de l'organisme

de l'hôte. [**Study of *A. lumbricoides* of swine outside the host.**]—*C. R. Acad. Sci., Paris.* **234,** 1216-1218. **1984**

Maximum times of survival for adult *A. lumbricoides* outside the host were obtained with a modification of Baldwin's fluid containing NaCl 0·8%; KCl 0·02%; $CaCl_2$ 0·02%; $MgCl_2$ 0·01%; $NaHCO_3$ 0·15%; glucose 5·0%. —J. T. Done.

Jaskoski, B. J. (1952). **The protein coat in development of *Ascaris lumbricoides* eggs.**—*Exp. Parasit.* **1,** 291-302. [Author's summary modified.] **1985**

A comparative study of the development of normal swine ascarid eggs and of others from which the protein coat had been removed.

At 8°C. the development of both normal and de-coated eggs immersed in detergent solution was retarded. The de-coated eggs developed at a higher temperature than normal eggs. No significant difference was found in the oxygen consumption or RQ (respiratory quotient) of normal and de-coated eggs.

Certain synthetic commercial detergents were found to have an inhibitory effect on the development of both normal and de-coated eggs. This effect was more pronounced on de-coated eggs, and was greatly enhanced by an increase in temperature beyond the optimum for development. The addition of phenol to the most effective detergents resulted in a decrease of the time necessary for prevention of cleavage.

De-coated eggs allowed to develop to motile-embryo stages were hatched successfully in certain detergent solutions.

There was evidence that the protein coat served as an important auxiliary barrier against the passage of materials through the ascarid egg shell.

Mann, P. H. & Fratta, I. (1953). **Survival of microfilariae of *Dirofilaria immitis* in rats and mice.**—*Science.* **117,** 18. **1986**

Viable microfilariae of *D. immitis* were found in the peripheral blood of rats and mice for at least 3 weeks after s/c and i/p injection. —Beryl A. Kay.

Kraneveld, F. C. & Djaenoedin, R. (1952). Enige zware gevallen van infectie met Spirocerca lupi (Strongylus lupi, Spiroptera, Spirocerca, Filaria sanguinolenta). [*Spirocerca lupi* **infestation in dogs.**]—*Hemera Zoa.* **59,** 101-102. [In Dutch.] **1987**

About 40–50% of the dogs slaughtered for human consumption at the abattoir of Balige (Sumatra, Indonesia) were infected with *Spirocerca lupi.*—C. A. van Dorssen.

Liebmann, H. (1953). Über die Verwendung proteolytischer Fermente zur Bekämpfung der Nematoden der Haustiere. [**Proteolytic enzymes for the control of nematodes in domestic animals.**]—*Berl. Münch. tierärztl. Wschr.* **66,** 17-22. **1988**

L. discussed the importance of the bacterial flora of the intestines in relation to parasitism. He emphasized the importance of avoiding the use of antiparasitic drugs which damage or destroy the normal bacterial flora. The proteolytic enzyme "vermizym" (a substance extracted from *Carica papaya* and containing papain) did not inhibit the growth of *Bact. coli;* its action against various live nematodes and cestodes of domestic animals was examined *in vitro.* With all the worms tested the cuticle was disrupted and maceration of the viscera had commenced after 2–5 hours at body temperature.—E. J. L. Soulsby.

See also absts. **2148** (report, Australia); **2151** (book, endoparasitic animals).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

Montemagno, F. (1952). Su di un raro reperto di epitelioma corneale in un bovino affetto da rickettsiosi congiuntivale. [**Epithelioma of the cornea in a cow with rickettsial conjunctivitis.**] — *Profilassi.* **25,** 117-120. [English, French, German and Spanish summaries.] **1989**

An account of a small corneal epithelioma in an ox with rickettsial conjunctivitis in Guatemala. Numerous rickettsia were present in the parenchyma of the neoplasm. —I. Martini.

Rigdon, R. H. (1952). **Tumors produced by methylcholanthrene in the duck. Papilloma, squamous-cell carcinoma, and hemangioma.** —*Arch. Path.* (*Lab. Med.*) **54,** 368-377. **1990**

By the injection of methylcholanthrene i/m, s/c, or at the surface of the skin, small localized tumours were produced in Pekin ducks. Metastasis was not observed, and the

papillomata, squamous cell carcinomata and haemangiomata regressed when no further methylcholanthrene was administered. The duck was found to be very satisfactory for the study of tumours produced in this way.—A.S.

ENGELBRETH-HOLM, J., RASK-NIELSEN, R., HOFF-JØRGENSEN, E. & KALCKAR, H. (1951). **The growth of Rous sarcoma in folic acid deficient chicks.**—*Acta path. microbiol. scand.* **29**, 84-95. **1991**

Although lack of folic acid influenced the development of Rous sarcoma in chicks, the incidence of tumours in the deficient chicks that survived for a sufficient length of time was nearly that of control chicks, although the tumours were very much smaller. The effect of the folic acid deficiency appeared to be on the cells, and not on the virus.—E. COTCHIN.

KENZY, S. G. (1953). **The development of visceral lymphomatosis in chickens inoculated with tumor preparations of avian myxosarcomas.**—*Cornell Vet.* **43**, 80-91. [Author's summary modified.] **1992**

Visceral lymphomatosis (VL) developed in chickens inoculated with a preparation containing cells from 2 myxosarcomas and with a cell-free extract from one of these.

The incidence of VL in all the inoculated groups was statistically significant ($P<0{\cdot}01$) when each was tested against the control. Subinoculation of a lymphoid tumour from a bird inoculated with a cellular suspension of a myxosarcoma was carried through 3 series. Some of the experimental evidence obtained supports the concept that VL may be produced by different entities. Both myxosarcomas were shown to be transplantable to a limited extent in the first subinoculation.

LUQUE, F. G. (1951). Contribución al estudio de la neurolinfomatosis ocular en las aves de Colombia. **[Fowl paralysis in Colombia.]**—*Rev. Fac. Med. vet., Bogotá.* **20**, 319-327. **1993**

A general note on fowl paralysis in Colombia. L. advocated as prophylactic measures selective breeding from resistant birds in conjunction with conventional methods of segregation.—A.S.

EL DARDIRY, A. H., WATERS, N. F. & COTTRAL, G. E. (1952). **The response of inbred lines of chickens to lymphoid tumor transplants.**—*Poult. Sci.* **31**, 523-534. **1994**

There was no indication that resistance or susceptibility to lymphoid tumour transplants in inbred lines of White Leghorn chicks were correlated with resistance or susceptibility to spontaneous lymphomatosis.

—F. T. W. JORDAN.

NIEPAGE, H. (1953). Erhebungen über die Rinderleukose und Untersuchungen des Blutbildes. **[The blood picture in leukaemia of cattle.]**—*Mh. VetMed.* **8**, 21-25. **1995**

The overall incidence in Mecklenburg, Germany, of cattle leucaemia was found to be 0·5% but in certain districts its incidence was at least 3 times this figure. It is more prevalent in the early spring before the cattle are turned out to pasture, but cases occur at all times of the year. The difficulties of diagnosis were discussed, the most reliable guide being the morphology rather than the numbers of the cells concerned present in the blood smears.

—J. A. NICHOLSON.

I. HADDOW, A. & TIMMIS, G. M. (1953). **Myleran in chronic myeloid leukaemia. Chemical constitution and biological action.**—*Lancet.* **264**, 207-208. **1996**

II. GALTON, D. A. G. (1953). **Myleran in chronic myeloid leukaemia. Results of treatment.**—*Ibid.* 208-213. **1997**

I. A series of sulphonic acid esters was synthesized on the assumption that their biological action might resemble that of the nitrogen mustards. 1:4-Dimethanesulphonyloxybutane (myleran or 'GT 41') was the most effective member in inhibiting tumour growth and blood cell formation, principally the myeloid series, in rats.

II. Nineteen patients with chronic myeloid leucaemia, treated orally with 4–10 mg. of myleran daily for 4–16 weeks or with short courses of 100–150 mg. in 1–6 days, responded initially, symptomatically and haematologically, and 8 obtained remissions of 6–21 months. Thrombocytopenia, occurring with large doses, was the only serious side effect.—A. ACKROYD.

NUTRITIONAL AND METABOLIC DISORDERS

BALCH, C. C. (1952). **Factors affecting the utilization of food by dairy cows. 6. The rate of contraction of the reticulum.**—*Brit. J. Nutr.* **6**, 366-375. **1998**

The rate of contraction of the reticulum was studied in 2 cows with rumen fistulas. The rate was most rapid during eating, least rapid during rumination, slightly increased by the administration of thyroxine, and little affected by feeding ground hay, which caused a great reduc-

tion in the amount of rumination.—A. SEAMAN.

DUNLOP, G. (1953). **Feeding of seaweed meal to lactating cows.** [Correspondence.] —*Nature, Lond.* **171,** 439-440. **1999**

D. stated that the addition of a meal of dried, milled, *Ascophyllum nodosum* seaweed to the ration of cows (200 g./day for 3 or 4 weeks) was followed by an increase in butterfat production. Some cows refused the meal.

—E. A. GIBSON.

GREIG, J. R. (1953). **The sheep dog—its management and feeding. A preliminary survey.** —*Brit. Vet. J.* **109,** No. 1. pp. 14-32. [Abst. from author's summary.] **2000**

Replies to a questionnaire to shepherds, covering 700 dogs, indicate that the sheep-dog's working life is relatively short, that kennelling conditions are rough, and diet monotonous and unbalanced. A critical study of the regular diet shows that it is also deficient in calcium, nicotinic acid, and possibly in riboflavin and vitamin D. The prevalent assumption that sheep-dogs in general enjoy a high standard of good health is ill-founded.

The diet could be much improved, and health consequently benefited, by the provision of a supplementary ration rich in animal protein and adequate in the requisite minerals and vitamins.

GROENEWALD, J. W. (1952). **The use of antibiotics in animal nutrition.**—*J. S. Afr. vet. med. Ass.* **23,** 235-243. [Author's summary modified.] **2001**

A saving in animal protein is possible by supplementing vegetable protein with vitamin B12 and aureomycin.

Present costs are, however, such that the use of vegetable protein rations and the proposed supplement aurofac would not prove more economical.

The chief function of the supplement appeared to be the stimulation of appetite and the stimulus to growth depends largely on the completeness and adequacy of the ration. Vitamin B12 appeared to be of greatest importance as an animal protein supplement.

WEBER, E. M., LUTHER, H. G. & REYNOLDS, W. M. (1952). **Antibiotics as animal-growth stimulants.**—*Bull. World Hlth Org.* **6,** 149-161. [In English. French summary. Abst. from authors' summary.] **2002**

Earlier studies which paved the way for research in this field were concerned with the inhibiting effect of sulphonamides on the intestinal flora, the antagonism of liver extract and *p*-aminobenzoic acid to these drugs, and the nutritional role of vitamin B_{12}, which was found to promote growth of chickens fed an all-vegetable diet. Interest in antibiotic-producing fermentations was increased by the finding that culture broths of several *Streptomyces* species contained this vitamin, which could be isolated in crystalline form. It was soon established that the growth-stimulating action of these cultures was a property not only of vitamin B_{12} but of the antibiotic itself.

Various explanations of the mechanism of growth-stimulation have been put forward: it may result from the action of antibiotics on intestinal microflora, and the inhibition of the development of bacteria which produce toxins or which compete with the animal for nutrients; or it may be that, by preventing the development of subclinical diseases, antibiotics create conditions favourable to the growth of the animal. Germ-free chicks reared for 8 weeks on experimental diets developed as well as normal chicks kept under identical conditions, and comparable quantities of vitamins were found in the caecal contents of both groups; this indicates that these vitamins were not necessarily of bacterial origin.

The growth-stimulating properties of rimocidin, which is essentially antifungal and has little or no antimicrobial activity proved to be comparable to those of bacteriostatic antibiotics. It thus appears that a mechanism considerably more complex than the simple antagonism of antibiotics to microbial flora is involved. Since the water-intake of chickens and swine fed antibiotics in small quantities is almost double that of controls, some physiological change is indicated. The high level of water-consumption points to a corresponding rise in the protein-imbibition rate, and it may well be that the cell walls take up more water and salts, thus increasing the body-wt. The general improvement in health associated with antibiotic action is an important factor which undoubtedly contributes to the animal's gain in wt. and to the fuller benefit it derives from its food.

BERTHELON, M. (1953). Facteurs de croissance, chez le poulain. **[Growth factors for foals.]** —*Rev. Méd. vét. Lyon et Toulouse.* **104,** 1-4. **2003**

Vitamin B_{12}, aureomycin and penicillin did not increase the rate of growth of foals aged 6–8 months when fed in amounts which increased the growth rate of pigs (about 3–5 mg./kg.).—N. DEAN.

BRIDGES, J. H., DYER, I. A. & POWERS, J. J. (1953). **Penicillin and streptomycin affect the**

microflora of the intestinal tract of pigs.—*J. Anim. Sci.* **12,** 96-101. [Abst. from authors' summary and conclusions.] **2004**

Penicillin and streptomycin, both singly and in combination, were added to a maize-degossypolized cottonseed meal ration for pigs. Neither penicillin nor streptomycin significantly increased the rate of growth when fed singly, but a combination of the two produced a rate of gain significantly faster than either the basal ration or the basal ration plus streptomycin.

The inclusion of penicillin or a combination of penicillin and streptomycin significantly increased the numbers of coliform bacteria in the faeces of the pigs. Likewise a combination of penicillin and streptomycin significantly increased the *Proteus* count over the basal group.

Among the most prevalent bacteria in the intestinal tracts of the pigs were *Shigella, Proteus, Staphylococcus* and coliform organisms.

The authors noted a significant correlation between rates of gain and the numbers of coliform bacteria when penicillin was included in the ration .

Another significant correlation was fouind between the wt. of faecal dry matter and the total bacterial count when a combination of penicillin and streptomycin was given.

King, J. O. L. & White, E. G. (1953). **The effects of penicillin supplements on the growth of chicks.**—*Vet. Rec.* **65,** 149-152. [Authors' summary modified.] **2005**

Eleven experiments on day-old chicks reared for 4 weeks on commercial chick rearing mash or on an adequate experimental diet showed variable results when penicillin supplements (mainly 25 mg./kg.) were given. Control and supplemented groups were reared in the 2 halves of the same brooders and 4 experiments were duplicated in 2 sets of buildings to see whether an "infection" which responded to penicillin could be demonstrated in old buildings used for chicks for some years as compared with new buildings with separate attendants. There was no difference between the wt. gains of chicks in the 2 sets of buildings, even in one experiment in which for the first week after hatching droppings from a poultry farm were scattered in the food troughs.

It was concluded that with adequate diets the young chick does not regularly benefit from a supplement of penicillin. Since no "infection" could be demonstrated in the old premises it seems unlikely that an infection is ubiquitous where chicks are kept for long periods; further work is needed before the existence of such an infection can be held to justify the feeding of penicillin supplements in practical poultry rearing.

Allen, C. E. & Dow, D. S. (1952). **The biological assessment of the value of rapeseed oil meal as a dietary component.**—*Sci. Agric.* **32,** 403-410. [Authors' summary slightly modified.] **2006**

The young chick is highly responsive when fed for four weeks on rations containing rapeseed oil meal. This response is characterized by marked thyroid hyperplasia and accelerated body weight gain accompanied by feed efficiency. The degree of response differs with the breed of chick employed. A marked inhibition of goitrogenic activity may be obtained either by hot water extraction of the meal or by the addition of iodine in the form of inorganic iodide. The findings suggest that rapeseed oil meal could be utilized to advantage; (a) as a protein supplement in the ration of growing chicks after either hot water extraction or the addition of iodide; (b) in its original form, as a protein supplement and fattening agent for chicks approaching market weight. Livestock might also be expected to respond favourably to rations containing rapeseed oil meal, but optimum feeding would have to be established for each species.

Reid, R. L. (1952). **Studies on the carbohydrate metabolism of sheep. V. The effect of hyperglycaemia and of insulin on the rate of extrahepatic glucose assimilation.**—*Aust. J. agric. Res.* **3,** 160-167. [Author's summary modified.] **2007**

Significant increases in the arterio-venous glucose difference have not been observed constantly in sheep either during the hyperglycaemia which follows i/v glucose inj. or during the period in which the blood glucose is falling after insulin administration. It is suggested that the low rate of extrahepatic glucose assimilation at hyperglycaemic levels provides a partial explanation of the relatively slow rate of clearance of injected glucose from the general circulation of ruminants. Blood-glucose curves, obtained after direct administration of glucose into the abomasum, were discussed in the light of these findings, and it was concluded that the rate of glucose absorption from the intestine of the sheep is low compared with the rate in non-ruminants. It was suggested further that hexokinase activity in the extra-hepatic tissues of the sheep is relatively low, and that the findings described are conditioned principally by the

nature of carbohydrate digestion and metabolism in the ruminant.

HENRICI, M. (1952). **Comparative study of the content of starch and sugars of *Tribulus terrestris*, Lucerne, some *Gramineae* and *Pentzia incana* under different meteorological, edaphic and physiological conditions. II. Carbohydrate nutrition.**—*Onderstepoort J. vet. Res.* **25**, No. 3. pp. 45-92. **2008**

This is a detailed study with many tables and graphs of variations in the sugar and starch content of the fodder plants under various natural conditions. A possible explanation was given of the occurrence in certain areas of diseases such as bloat and photosensitization.

—CHARLOTTE M. WOOD.

I, II & III. WIESE, H. F. & HANSEN, A. E. (1951). **Fat in the diet in relation to nutrition of the dog. I. Characteristic appearance and gross changes of animals fed diets with and without fat. II. Lipid composition of tissues from animals fed diets with and without fat. III. Spectral analysis for unsaturated fatty acid content of tissues from animals fed diets with and without fat.**—*Tex. Rep. Biol. Med.* **9**, 490-515, 516-544 & 545-554. **2009**

IV. HANSEN, A. E., HOLMES, S. G. & WIESE, H. F. (1951). **Fat in the diet in relation to nutrition of the dog. IV. Histologic features of skin from animals fed diets with and without fat.**—*Ibid.* 555-570. **2010**

I, II, III & IV. Young dogs were fed 1, 6, 11, 16 and 30% of the calorie intake of an otherwise balanced diet as various fats. Those fed below 16% of the calorific ration developed skin changes ranging from dryness and desquamation to widespread alopecia. These changes were correlated to the iodine number of the serum fatty acids and type of dietary fat, and the serum showed lowered cholesterol, cholesterol esters and total fatty acids on a fat deficient diet. In all tissues there were changes in lipoid composition. Spectral analysis correlated tissue unsaturated fatty acids with dietary fat. Histologically the skin from fat deficient dogs showed hyperkeratosis of the stratum corneum, epidermal pegging of the oedematous dermis with early enlargement of sebaceous glands.—JOHN SEAMER.

ANON. (1951). **Bibliography of the literature on the minor elements and their relation to plant and animal nutrition. Vol. II.** pp. 152. New York: Chilean Nitrate Educational Bureau, Inc.; London: Nitrate Corporation of Chile Ltd. 4th Edit. [Not for sale.] **2011**

This volume containing 1,222 abstracts deals with 35 elements and covers literature published from July 1947 to December 1950 [for Vol. I, see *V.B.* **19**, 3087]. Compiled primarily for the use of institutions and scientists engaged in agricultural and nutrional research, it has good Author, Element, General Nutrition and Botanical indexes.

—E. MARSH JONES.

SEEKLES, L. (1952). Les oligo-éléments et leurs carences en pathologie comparée. [**Trace element deficiencies in animals.**]—*VIth Cong. int. Path. comp., Madrid.* 1952. pp. 1-18. [In French. English, German and Spanish summaries.] **2012**

The suggestions were advanced that an effect of cobalt upon cellulose digestion in the ruminant may have an influence in pining and acetonaemia, that the effect of arsenate on carbohydrate metabolism may effect acetonaemia, that manganese may affect synthesis of ascorbic acid, that zinc may be related to vitamin B_1 activity and that copper has an influence on nitrogen metabolism.—R. MARSHALL.

HÄFELE, W. (1952). Die "Semperkrankheit" eine Ernährungs- und Entwicklungsstörung des Rindes im Hochschwarzwald in der Umgebung von St. Blasien. [**"Semperkrankheit", a deficiency disease of cattle in the Black Forest.**]—*Inaug. Diss., Munich.* pp. 100. **2013**

H. discussed a sporadic deficiency disease in ruminants, particularly in cattle, which is peculiar to the Black Forest district of Germany. The condition is marked by anorexia, "staring" of the coat, eczema and retarded growth, frequently accompanied by a perverted appetite for urine, rubber, sand, wood etc. When on pasture, the animals give preference to certain plants. Calf mortality is high.

Analysis of soil from 22 affected farms revealed deficiency of calcium and phosphorus. Hay was deficient in copper and cobalt, but was rich in zinc, manganese and molybdenum.

Treatment of affected cattle with wood ash, charcoal, ferrous sulphate, molasses and change of pasture improved their condition. It was stated that complete cure was obtained after treatment with a proprietary mineral mixture containing trace elements. Forty case histories were given.—E.G.

GIANELLI, F. (1951). Contributo alla conoscenza delle calcolosi pancreatiche dei bovini. [**Pancreatic calculi in cattle.**]—*Atti Soc. ital. Sci. vet.* **5**, 218-224. [English and French summaries.] **2014**

In two cases observed in cattle pancreatic

calculi appeared to be numerous but comparatively small. They were constituted by carbonates, phosphates (Ca, Mg) and organic substances.—I. MARTINI.

GOLDECK, H., HERRNRING, G. & SCHMIDT, E. (1950). Der erythropoietische Kobalt-Effekt im Tierversuch. **[Erythropoietic effect of cobalt in animals.]**—*Folia haematol.* **69,** 225-229. **2015**

Blood counts on rats following the oral administration of complex cobalt compounds revealed changes in the comparative numbers of the various developmental stages of reticulocytes and a considerable increase in the total number of those cells. The authors considered that these findings demonstrated the stimulative effect of complex cobalt salts on erythropoiesis. —A.S.

DUNLOP, G. (1953). **Effect of a copper supplement to the rations of milking cows.** [Correspondence.]—*Nature, Lond.* **171,** 356-357. **2016**

Ration supplements of 10 g. $CuSO_4$ fed to dairy cows in herds in the West of Scotland produced significant increases in butter fat. —JOHN SEAMER.

SEEKLES, L. (1952). Le cuivre en metabolisme normal et anormal chez l'homme et chez les animaux. **[Copper in normal and abnormal metabolism in man and animals.]**—*VIth Cong. int. Path. comp., Madrid.* 1952. pp. 19-35. [In French. English, German and Spanish summaries and discussions.] **2017**

The copper content of tissues of cattle may be very low. On certain soils insufficient absorption by plants occurs to provide the necessary copper for animals. Cattle seem to differ from horses and human beings in their requirements of copper. Some biological processes in which copper probably has an effect were mentioned.—R. MARSHALL.

MARSTON, H. R. (1952). **Cobalt, copper and molybdenum in the nutrition of animals and plants.**—*Physiol. Rev.* **32,** 66-121. **2018**

Knowledge of ruminant trace element metabolism was extensively surveyed. Cobalt deficiency, therapy and relationship to vitamin B_{12} and like compounds were discussed. Excess and deficiency of copper, its place in tissues and secretions, keratin, melanin and the copper-iron and copper-molybdenum linkage, together with related information on plant nutrition were annotated.—JOHN SEAMER.

STEWART, J. (1952). **Magnesium deficiency diseases in cattle and sheep.**—*Ann. Rep. Anim. Dis. Res. Ass.* 1951-52. pp. 17-18. **2019**

Development of magnesium deficiency has caused big losses among cattle and sheep. Dressing the pastures with magnesian limestone is being tried in an effort to prevent the disease. —G. B. S. HEATH.

HOFMANN, W. (1952). Nutrition animale et fertilité. **[Nutrition and fertility. (Effect of excess potassium.)]**—*Proc. VIth int. Congr. anim. Husb., Copenhagen,* 1952. **3,** 46-53. [In French. English, German and Danish summaries.] **2020**

Frequent application of liquid manure to grass fields causes accumulation of potassium in the plants so that an animal may ingest 480 g. daily. Such amounts may seriously interfere with fertility, causing ovarian insufficiency, and inflammation of the genital tract even in young animals.—N. DEAN.

MENEELY, G. R., TUCKER, R. G. & DARBY, W. J. (1952). **Chronic sodium chloride toxicity in the albino rat. I. Growth on a purified diet containing various levels of sodium chloride.**—*J. Nutr.* **48,** 489-498. [Authors' summary modified.] **2021**

Young male rats were raised on a purified diet, containing 7 different levels of sodium chloride, and water *ad libitum* with the following results: Rats fed diets high (2·8 to 9·8%) and low (0·01%) in sodium chloride grew more slowly than those on a control ration (0·15% NaCl). High sodium chloride feeding caused polydipsia and polyuria but did not have a marked effect on appetite. A low-sodium diet caused mild anorexia. Oedema developed during this first 20-week period in 10% of the rats fed diets containing from 7·0 to 9·8% of sodium chloride. The majority of the animals (89%) remained in excellent health throughout the 20 weeks.

I. BLACK, D. A. K. (1953). **Body-fluid depletion.**—*Lancet.* **264,** 305-311. **2022**

II. BLACK, D. A. K. (1953). **Body-fluid depletion.**—*Ibid.* 353-360. **2023**

I & II. A general account of body fluid depletion with special reference to sodium and potassium. A sodium depletion leads to a shrinkage of extra-cellular fluid and commonly occurs in gastro-intestinal disease, excess sweating, Addison's disease etc. Acute depletion responds readily to normal saline administration, but chronic sodium depletion is more difficult to treat and hypertonic (5%) saline solutions

are suggested. Large amounts of sodium have an acidifying effect so that in such cases one-fifth of the sodium should be given as lactate.

A potassium depletion frequently accompanies a sodium depletion and is usually due to the escape of gastro-intestinal secretions or excessive loss of potassium in the urine. The main symptoms are muscular weakness or paralysis and cardiac irregularity. Treatment with potassium salts should be by mouth as arrest of the heart may follow parenteral administration.—J. A. NICHOLSON.

RAOUL, Y., LE BOULCH, N., CHOPIN, J., MEUNIER, P. & GUÉRILLOT-VINET, A. (1952). Préparation du corps antirachitique dérivant du 2:4, 2′4′bicholestadiène. **[Preparation of the anti-rickets factor from 2:4, 2′4′-bicholestadiene.]**—*C.R. Acad. Sci., Paris.* **234,** 2493-2495. **2024**

Irradiation of 2:4, 2′:4′-bicholestadiene gives a substance of high antirachitic potency. It is not vitamin D_3.—N. DEAN.

WOLBACH, S. B. & HEGSTED, D. M. (1953). **Hypervitaminosis A in young ducks. The epiphyseal cartilages.**—*Arch. Path.* (*Lab. med.*) **55,** 47-54. **2025**

A report of the effect of excessive doses of vitamin A upon the epiphyseal cartilage of young ducks. Qualitatively the skeletal reaction was precisely the same as in chicks and certain mammals. The only differences were quantitative and were referable to differences in the rate of growth of various bones.

—L. M. MARKSON.

I. BLAXTER, K. L., WATTS, P. S. & WOOD, W. A. (1952). **The nutrition of the young Ayrshire calf. VIII. Muscular dystrophy in the growing calf.**—*Brit. J. Nutr.* **6,** 125-144. [Abst. from authors' summary.] **2026**

II. BLAXTER, K. L. & WOOD, W. A. (1952). **The nutrition of the young Ayrshire calf. IX. Composition of the tissues of normal and dystrophic calves.**—*Ibid.* 144-163. [Authors' summary modified.] **2027**

III. MACDONALD, A. M., BLAXTER, K. L., WATTS, P. S. & WOOD, W. A. (1952). **The nutrition of the young Ayrshire calf. X. Histopathology of muscular dystrophy and its relation to muscle chemistry.**—*Ibid.* 164-169. [Authors' summary modified.] **2028**

I. The authors described observations on a disease of young calves, gave reasons for the diagnosis of vitamin E deficiency and described an experiment with 16 Ayrshire calves. All were given a basal diet containing dried skim milk, lard and a mineral supplement. Eight were given vitamins A and D as the pure substances dissolved in arachis oil, and eight were given equivalent amounts as cod-liver oil. Four animals in each of these groups received in addition 50 mg DL-α-tocopheryl acetate daily. Signs of dystrophy occurred in all groups other than that receiving both α-tocopherol and the arachis-oil solution. These signs were described in detail.

Nitrogen-balance studies with four calves showed that animals that were found dystrophic on P.M. examination stored less nitrogen than the others. The high urinary excretion of nitrogen was due to an increase in excretion of urea and ammonia. The oxygen consumption of dystrophic animals was increased. The excessive nitrogen katabolism and the increased heat production were probably interrelated.

P.M. examination revealed an extensive dystrophy with oedema, involving both skeletal and cardiac muscles. The dystrophy was bilaterally symmetrical.

The characteristic attitudes adopted by the calves before death, flexing of the carpus, straightening of the hind-limbs, spreading of the claws of the foot and winging of the scapulas, were all associated with severe dystrophy of the muscles controlling the movement of the joints concerned.

The daily ingestion of 15–18 ml. cod-liver oil neutralized the protective action of 50 mg. DL-α-tocopheryl acetate daily.

The abnormalities found were compared with those described in similar naturally occurring diseases in Europe and America, and it was concluded that all these conditions probably result from vitamin E deficiency.

II. The authors gave data relating to the chemical composition of muscles of the calves described above. The dry-matter content of dystrophic muscles was lower than that of normal muscles. The ash content was greatly increased. Those muscles that were the most seriously affected contained nearly three times as much ash as normal muscles. There was a considerable calcification of the affected muscles, an increase in their sodium content and a decrease in their potassium content. The phosphorus content was slightly increased but, on the basis of only a few analyses, magnesium content remained within the normal range.

The total lipoid content of the dry muscle increased in dystrophic muscle. The total and free cholesterol and phospholipin content of the dry muscle also increased. The percentage of cholesterol and phospholipin in the total lipoid of dystrophic muscle, however, was unchanged.

The total nitrogen content of dry dystrophic

muscle was less than that of normal muscle. There was an increase in the amount of collagen The total globulin nitrogen was markedly decreased, the nucleic acid content increased and the iron content of the muscle decreased.

In dystrophic muscles the creatine content expressed either on a wet or a dry basis was greatly reduced. The reduction in the creatine content of the skeletal muscles was bilaterally symmetrical in the individual calf. The classification of affected muscles by visual examination agreed only partly with their creatine content.

Statistical analysis of the analytical results confirmed the conclusions on the effect of presence of cod-liver oil and absence of vitamin E in the production of muscular dystrophy.

Data relating to liver and brain composition were presented.

The results were discussed, and it was pointed out that the results could be explained by a major change in the synthesis or destruction, or both, of globulins in dystrophic musculature. An increase in fat, cholesterol, lipoid phosphorus, stroma protein and collagen as well as oedema of the muscle could be accounted for in this way. Secondary changes account for the calcification and part of the increase in nucleic-acid content.

III. A description of the histology of muscular lesions observed in calves was presented. It was shown that the macroscopic, biochemical and histological data were in good agreement. Differences between the histology of the lesion in the dystrophic calf and in other dystrophic animals were emphasized.

DAM, H., PRANGE, I. & SØNDERGAARD, E. (1952). **Muscular degeneration (white striation of muscles) in chicks reared on vitamin E deficient, low fat diets.**—*Acta path. microbiol. scand.* **31,** 172-184. [In English.] **2029**

This manifestation of vitamin E deficiency in chicks occurring when the diet was low in fat, was reproduced experimentally. The gross and histological findings were described and the condition prevented by adding α-tocopherol to the diet.—F. T. W. JORDAN.

MIRKO, K. (1951). Giht kod pataka. [**Gout in ducks.**]—*Vet. Glasnik.* **5,** 124-125. [In Croat.] **2030**

Gout was observed both in the acute and in the chronic forms on a duck farm where green vegetables were fed only occasionally. The death-rate was fairly high before a suitable treatment could be applied. It consisted in the administration of brewer's yeast and green clover.—I. MARTINI.

GIRDWOOD, R. H. (1952). **The relationships between vitamin B_{12}, folic acid and folinic acid.**—*Brit. J. Nutr.* **6,** 315-324. **2031**

Folic acid and vitamin B_{12} prevent megaloblastic anaemia (studies in pigs). Protein deficiency increases the need for folic acid, which is probably converted to folinic acid in normal metabolism.—JOHN SEAMER.

SMALCELJ, I. (1952). B-Vitamin Komplex und Praxis der Fütterung und Mast der Schweine. [**The vitamin B complex in feeding of pigs.**] —*Proc. VIth int. Congr. anim. Husb., Copenhagen,* 1952. **2,** 150-155. [In German. English, French and Danish summaries.] **2032**

It is estimated that feeding 10% yeast containing animal protein factor to pigs in the southern Danube Basin would reduce the requirement for concentrated feed by 30–40%. —N. DEAN.

MOUSTGAARD, J. (1952). **The vitamin B requirement of young pigs to ensure the best possible gain and feed utilisation.**—*Proc. VIth int. Congr. anim. Husb., Copenhagen,* 1952. **2,** 125-144. [In English. French, German and Danish summaries.] **2033**

Danish experiments have shown that the optimum thiamine requirement of growing pigs is greater than has been assumed, *viz.* 75 μg./kg. daily. The daily requirement of pyridoxine is 100 μg./kg. and of pantothenic acid 400–500 μg./kg.—N. DEAN.

ROTT, F. (1952). Untersuchungen über Ferkel- und Kälberruhr und deren Behandlung mit Bierhefe. [**Treatment of diarrhoea in piglets and calves with brewers' yeast.**]—*Inaug. Diss., Munich.* pp. 50. **2034**

R. discussed the aetiology of diarrhoea in piglets and calves. He found brewer's yeast to be a valuable preventive in pigs and a good curative agent in calves. Several case histories were given together with information about the composition of yeast and its probable mode of action as a therapeutic agent.—J. EDWARDS.

SHANKS, P. L. (1953). **Diarrhoea in pigs.**—*Vet. Rec.* **65,** 109-110. **2035**

S. described 3 types of "milk scours" affecting piglets in northern Scotland. He considered 2 to be of dietetic origin, and the third to be similar to the transmissible gastro-enteritis described in America.—E. A. GIBSON.

HOFSTRA, S. T. (1952). Weidediarrhee bij het rund op laagveengrond in het zuidwesten van Friesland. [**Diarrhoea in grazing cattle in Friesland.**]—*Tijdschr. Diergeneesk.* **78,** 146-153. [English summary.] **2036**

The symptoms of scouring disease in cattle grazing on peat land are diarrhoea, roughness of the coat, symmetrical achromatrichia, anaemia and sometimes alopecia. H. suggested that the real cause of the disease is vitamin B deficiency. The success of treatment with ionized copper is attributed to its influence on the vitamin-synthetizing micro-flora of the rumen.—C. A. VAN DORSSEN.

ROGER, H. & ÖZCAN, C. (1952). Ferments lactiques. Leur emploi dans le traitement des diarrhées des bovins. **[Lactic acid enzymes in the treatment of diarrhoea in cattle.]**—*Rec. Méd. vét.* **128,** 761-770. **2037**

The treatment of diarrhoea by the method described is based upon the antagonism between the lactic ferment bacteria and those which cause putrefaction in the intestine. The bacteriological background of the theory was given.

The authors used a lactic ferment preparation composed as to 98% of *Lactobacillus acidophilus* and as to 2% of lactic streptococci. A few case records of its use in cows and calves were given.—J. EDWARDS.

VIGUE, R. F. (1952). **Influence of protein on the milk fever complex: a four year study. Part II. Ketosis (acetonemia.)**—*Vet. Med.* **47,** 491-496 & 506. **2038**

The author considers that improper feeding (inadequate protein, poor quality roughage) produces most cases of acetonaemia. More complete proteins in the diet are advocated for prophylaxis and protein in conjunction with glucose therapeutically.—JOHN SEAMER.

DYE, J. A., ROBERTS, S. J., BLAMPIED, N. & FINCHER, M. G. (1953). **The use of cortisone in the treatment of ketosis in dairy cows.**—*Cornell Vet.* **43,** 128-160. **2039**

Cortisone has been successfully used for *post-partum* ketosis. The adrenal cortex and ant. pituitary are responsible for gluconeogenesis; following stress, liver glycogen and blood glucose are lowered and hepatic oxidation of fatty acids and pyruvates fails. Although cortisone is ketogenic in this circumstance the authors consider that a relative cortico-adrenal insufficiency may also occur.—JOHN SEAMER.

PLUMLEE, M. P., HANSARD, S. L., COMAR, C. L. & BEESON, W. M. (1952). **Placental transfer and deposition of labelled calcium in the developing bovine fetus.**—*Amer. J. Physiol.* **171,** 678-686. [Authors' summary modified.] **2040**

Data were presented showing the uptake and turnover of labelled calcium in the dam and 8-month foetus at 10 min., 8 hours, 30 hours and 168 hours after i/v inj., and also in foetuses of various ages 7 days after oral administration of calcium to the dam. Calcium, phosphorus and ash values were reported. There was relatively free movement of Ca^{45} across the placenta. However, the equilibrium of calcium ions between blood of foteus and dam was not observed until some time after equilibrium had been attained between the blood and soft tissues of the dam, suggesting the existence of a certain degree of blockage. A greater uptake and turnover of Ca^{45} was demonstrable in the foetal bones than in the maternal bones. Mineralization in the foetal bones was at a max. some time between the 4th and 7th month as indicated both by the uptake of Ca^{45} and the analytical values.

HENDERSON, G. W. (1952). **Pathological conditions resulting from generative disorders of metabolism.**—*Canad. J. comp. Med.* **16,** 300-309. **2041**

Case histories of oestral disorders. These are usually manifested in dairy cows by toxic conditions, udder or digestive disturbances and, occasionally, paralytic symptoms.

—R. GWATKIN.

See also absts. **1952** (vitamins and antibody production); **2128** (vitamin E treatment of sterility in cows); **2148** (report, Australia).

DISEASES, GENERAL

SEDDON, H. R. (1952). **Diseases of domestic animals in Australia. Part 4. Protozoan and viral diseases.** pp. 214. Department of Health, Australia, Service publication (Division of Veterinary Hygiene). No. 8. **2042**

This is a further publication in the series of review monographs dealing with diseases of animals in Australia which Seddon has been preparing.

The individual diseases concerned are dealt with in detail. There are maps showing the incidence of certain conditions and there are good reference lists.

The series—of which this is the last—covering the diseases of animals provides a comprehensive account of the disease of animals in Australia. It is impossible to overestimate the value of such an authentic account of the disease position in a particular country and the information contained therein is

immensely useful to workers both in Australia and elsewhere.

[For previous publications in this series, see *V.B.* **19**, 1542; **21**, 2652; **22**, 158 & 1051 and **23**, 1968.]—D. C. Blood.

Wardle, R. N. (1951). **The development of Commonwealth animal quarantine.**—*Aust. vet. J.* **27**, 219-225. **2043**

An account of animal quarantine regulations in Australia. A uniform system was introduced in all States in 1909. W. recorded the outstanding success of State and Commonwealth co-operation in this matter and described the development and consolidation of the necessary legislation. He commented on the success of the Quarantine Act in keeping Australia free from exotic infectious diseases and discussed those aspects of animal quarantine which will require careful consideration in the future.

—J. D. Steel.

Brash, A. G. (1952). **Protecting New Zealand livestock against importation of disease.**—*N.Z. J. Agric.* **84**, 436-439. **2044**

An explanation of the need for quarantine regulations, followed by brief descriptions of some of the epizootics which could gain entry to New Zealand.—E. A. Gibson.

Nouvel, J. (1952). Quelques observations sur la pathologie de l'autruche au parc zoologique du bois de Vincennes. **[Diseases of ostriches in zoological gardens.]**—*Rec. Méd. vét.* **128**, 416-424. **2045**

Description of the more important ailments affecting ostriches in captivity, with particular reference to the parasitic diseases, the gastro-enteric disorders, often caused by ingestion of foreign bodies, and traumatism of which two interesting cases were reported.

—J.D.

Mitchell, W. M. & Zlotnik, I. (1952). **Intermittent luxation of the patellae in a hunter.** [Lesions in spinal cord.]—*Vet. Rec.* **64**, 329-330. **2046**

In a horse in which damage to some of the fibres of the sciatic and femoral nerves was demonstrable, there was also replacement of the Nissl substance by granules of a lipoid nature in some of the ventral horn neurones of the spinal cord, in the region of the first 3 lumbar vertebrae.—R. N. Smith.

Goffinet. (1952). La pathologie dentaire chez le cheval. **[Diseases of the teeth in horses.]** —*Ann. Méd. Vét.* **96**, 467-491. **2047**

A general discussion on the gross surgical diseases of the teeth of the horse, with particular reference to variation in number, dentigenous cysts, irregular wear and dental caries and sequelae of these conditions, with the addition of a few case histories.

—B. G. Clarke.

Van Zijl, W. J. (1952). Atrioventriculaire geleidingsstoornissen bij paard, rund en hond. **[Atrioventricular heart block in horses, cattle and dogs.]**—*Tijdschr. Diergeneesk.* **77**, 536-541. [English summary.] **2048**

A description and classification of heart-block of the atrioventricular type in horses, cattle and dogs, accompanied by electrocardiograms.—C. A. van Dorssen.

Pedini, B. (1952). Fibrillazione atriale nel bovino. (Osservazioni personali). **[Atrial fibrillation in cattle.]**—*Nuova Vet.* **28**, 183-187. **2049**

P. described two cases of atrial fibrillation in the ox as revealed by electrocardiograms. The prognosis is usually favourable when the ventricular frequency is still approx. normal.

—I. Martini.

Shanks, P. L. (1953). **Big liver disease in pigs.** —*Vet. Rec.* **65**, 58. **2050**

A preliminary report of a syndrome appearing sporadically in piglets 3–5 weeks old in northern Scotland. Clinically there are usually anaemia and exaggerated heart action leading to collapse and death, though some piglets survive and are unthrifty. At P.M. examination the most conspicuous changes seen are ascites and enlargement of the heart, kidneys, spleen and especially the liver which may reach 13 oz. (normal about 4 oz.). Bacteriological examination has been consistently negative and the disease does not appear to be prevented by feeding iron.—J. T. Done.

Grau, H. (1949.) Das "Ferkelsterben." **[Sudden death in young pigs.]**—*Tierärztl. Umsch.* **4**, 260-263. **2051**

The condition of congenital dropsy in young pigs was compared with congenital myxoedema and erythroblastosis in human babies. "Thick-neck" in piglets 3–6 weeks old appears to have occurred commonly during the war years in Germany and Austria, and to have abated with the return of the incorporation of animal protein in the rations.

Dropsical piglets tend to be carried up to 10 days or more beyond normal term. Such examinations as have been made indicate that the condition is not an erythroblastosis, but the possibility of iodine deficiency, at least as a complicating factor, is not excluded.

—Alastair N. Worden.

STOVIN, G. H. T. & STOVIN, P. G. I. (1953). **Keratitis in pigs.**—*Vet. Rec.* **65**, 74-76. **2052**

A form of keratitis seen in piglets at birth was ascribed to the operation of a Mendelian recessive gene. [No clear description of the condition was given, and the validity of the genetical evidence in favour of the hypothesis advanced is dubious.]—J. T. DONE.

RUMEAU. (1952). Essais de traitement de la myoglobinurie paroxystique dans la région de Sidi-Bel-Abbès. [**Treatment of myohaemoglobinaemia, in the Sidi-Bel-Abbès region.**]—*Rev. Méd. vét.* **103**, 205-211. **2053**

A clinical note on 12 cases of equine myohaemoglobinaemia, treated by i/m injection of 2 proprietary vitamin preparations of unstated composition, together with sodium bicarbonate. This was stated to have given successful results in all except 2 cases.—N. DEAN.

WINTER, H. & STEPHENSON, H. C. (1952). **A case of eosinophilic myositis in a dog.**—*Cornell Vet.* **42**, 531-537. [Authors' summary modified.] **2054**

A report of eosinophilic myositis affecting the masseter, pterygoid and temporalis muscles in a dog, stated to be the first report of the disease outside Europe. The cause of the disease is unknown. The prognosis is grave.

GRAWITZ, P. B. (1951). Der Beginn des Entzündungsprozesses im Bindegewebe. [**The inflammatory process and its origin in the connective tissue.**]—*Virchows Arch.* **321**, 62-76. **2055**

A study of the changes in the connective tissue of rabbit skin during the process of inflammation. The skin was irritated by the injection of one or other of various chemical substances, and the stages of inflammation studied in animals killed at various intervals after inj. The first response—the "shock-phase" reaction—followed between 1 and 270 min. after injection, according to the substance used. It consisted of an alteration of certain cells in the ground tissue, which became modified to form leucocytes. The second phase, of varying duration, was an inactive interval before the final, main, reaction of inflammation, in which the cells of the connective tissue round the focus of inflammation were progressively changed into polynuclear leucocytes, while the fibres and capillaries also underwent change. The leucocytes produced by the ground tissue were not alike, and acidophiles, basophiles, and neutrophiles could be clearly distinguished among them.—A.S.

OETTGEN, H. (1951). Die "segmentalen" Pneumonien und andere herdförmige Lungenerkrankungen. [**"Segmented" pneumonia and other focal diseases of the lungs.**]—*Virchows Arch.* **319**, 578-600. **2056**

As a result of observations of pneumonia in human beings the author carried out experiments on cats and rabbits to study the influence of nerves on the focal distribution of inflammatory processes in the lungs and to ascertain whether lesions could be produced by reflex excitation. No such indications were found.
—E.V.L.

KELLETT, C. E. (1952). **Complementary activity of the blood in acute nephritis. With special reference to prognosis.**—*Lancet.* **263**, 911-914. [Author's summary modified.] **2057**

K. confirmed the fall in the complementary activity of the blood which has been described [in human beings] in acute nephritis. However, a similar fall can occur in certain diseases not directly related to acute nephritis. While a delay in the return of the complementary activity to normal is usually associated with progressive renal deterioration, in one case at least the complement remained low for over a year without any obvious deterioration. It seems probable that reduced complementary activity in the early stages of a nephritis indicates acute glomerulonephritis, and that a considerable delay in the return to normal implies a relatively poor prognosis.

ANON. (1951). Resolution der Moskauer Gesellschaft der pathologischen Anatomen "Zur Kritik der Virchowschen Zellularpathologie und Wege zur Entwicklung der sowjetischen Patho-Morphologie". [**Virchow's cell pathology and Soviet patho-morphology.**]—*Zbl. allg. Path. path. Anat.* **87**, 34-38. **2058**

An official Soviet criticism of the Virchow school of cellular pathology by the Moscow Society of Pathologists.

Virchow's methods are not in keeping with modern Marxist doctrine, which calls for a close investigation of all systems and functions of the body in relation to the external environment and the nervous system.—A.S.

See also absts. **1845** (bacterial diseases of animals); **2148** (report, Australia).

POISONS AND POISONING

SIKES, D. & BRIDGES, M. E. (1952). **Experimental production of hyperkeratosis ("X disease") of cattle with a chlorinated naphthalene.**—*Science.* **116**, 506-507. **2059**

Having established the toxic dose of pentachloronaphthalene for cattle, the authors

fed a small quantity of the compound daily to 2 animals for 10 days. Typical symptoms and lesions of hyperkeratosis, as described by other workers, were produced in both animals. This is the first time that a named chemical compound has been used to reproduce the condition, and the use of pentachloronaphthalene in farm practice would appear to present a possible danger to cattle.—R. M. LOOSMORE.

OLSON, C., JR. (1953). **Observations on a milk factor in bovine hyperkeratosis.**—*J. Amer. vet. med. Ass.* 122, 25-28. **2060**

Five of the 11 calves which were reared during a period of 7 years by 2 affected cows developed symptoms of hyperkeratosis. The author suggested that the disease was transmitted by a toxic factor in the milk.

—E. A. GIBSON.

DRILL, V. A. (1952). **Hepatotoxic agents: mechanism of action and dietary interrelationship.**—*Pharmacol. Rev.* 4, 1-42. [Abst. from author's summary.] **2061**

D. discussed hepatotoxic agents such as chloroform, carbon tetrachloride, chlorinated hydrocarbons, propylene dichloride, ethyl alcohol, benzene, brombenzene, methyl chloride, trinitrotoluene, pyridine, azo-compounds, phosphorus, arsenic and selenium, which can produce fatty changes, necrosis and fibrosis of the liver. Diets rich in fat increase the toxicity of most of the chemicals discussed. The safest diets are therefore those rich in carbohydrates and protein and poor in fat. However, it should not be assumed that an increase or decrease in toxicity of the hepatotoxic agents with various diets is due to an increase or decrease in the severity of liver injury since the mortality may be affected because of changes induced in other organs such as the kidney or the heart. Low protein diets produce liver injury and can also affect the toxicity of the compounds discussed, but again the increased toxicity is not necessarily synonymous with increased hepatic damage.

Depending on the hepatotoxic agent used, its dose and route of administration, and the dietary conditions, mortality may be influenced by choline, methionine, cystine, other compounds supplying SH groups, or totally unrelated agents. Changes in mortality obtained by such supplements may be independent of effects on the liver.

The more unbalanced the diet, particularly with regard to protein deficiency the more likely is it that various supplements will decrease the toxic effects of hepatotoxic agents by affecting the liver, kidneys or other organs, though with certain compounds survival has been increased by some supplements even when a normal diet was being fed to the experimental animal.

Injections of glucose or diets rich in carbohydrate seem to offer protection in certain cases: this protective effect is not related to the maintenance of liver glycogen, but rather to a decrease in the degree of protein breakdown as measured by nitrogen excretion. The mechanism by which the various compounds and deficient diets produce liver damage is unknown. Preliminary data tend to point to an effect on SH groups and oxidation-reduction potentials. A bibliography of 271 references is included.

SWAN, J. B. & MCINTOSH, I. G. (1952). **The toxicity of North African phosphate and superphosphate to milking cows.**—*Proc. N.Z. Soc. Anim. Prod.* 12, 83-88. **2062**

Following a report of ill-health and one death in a dairy herd from the ingestion of phosphatic fertilizer, 3 dry cows and 3 milking cows were drenched with 0·5 lb. of North African rock phosphate daily for 5 days. No ill effects were noted. However, the grazing of cows on one acre pastures dressed with 5 cwt. N. African phosphate or 5 cwt. superphosphate caused scouring on the 3rd day and a considerable drop in milk yield. Rain then fell and the animals recovered completely. The authors recommended that phosphatic fertilizers should not be applied to damp herbage and that dressed pastures should be grazed only after a good rainfall.—J. A. NICHOLSON.

ANON. (1953). **Mercury poisoning in swine.**—*J. Amer. vet. med. Ass.* 122, 105. **2063**

Twelve pigs from one herd developed mercurial poisoning following 3 months' feeding on wheat treated with a proprietary form of methoxyethyl mercurisilicate. Other herds in Georgia were also affected.—A. SEAMAN.

VELDSMAN, D. P. (1952). **Chemical investigation of *Pachystigma pygmaeum* Schlechter (gousiektebossie).**—*Onderstepoort J. vet. Res.* 25, No. 4. pp. 113-121. **2064**

P. pygmaeum is suspected to cause poisoning of sheep in the Transvaal.

Leaves and stems of the plant collected at Kaalfontein in Oct. 1950 were subjected to a chemical investigation. Four crystalline substances were isolated: a lactone, m.p. 199°C.; a phytosterol, m.p. 253–256°C., mannitol, m.p. 166°C., and a flavone glycoside which sintered at 194–195°C. and finally melted at 222–224°C.

All these substances were tested out on rabbits with negative results.

RIMINGTON, C. (1952). **Haems and porphyrins in health and disease. Parts I and II.**—*Acta med. scand.* **143,** 161-176 & 177-196. [In English.] **2065**

I & II. The life of almost every kind of cell depends upon the function of its haem enzymes —the pigment moiety of haemoglobin. The first porphyrin to appear in the bone marrow is uroporphyrin III, accompanied by uroporphyrin I as a by-product. Uroporphyrin III could be expected to be decarboxylated and dehydrogenated to coproporphyrin III to produce ultimately protoporphyrin ready for the incorporation of iron.

Pathological production of porphyrin pigments may accompany serious and sometimes fatal illness. Porphyrinuria, in which the excretion of the ether-soluble porphyrin, mainly coproporphyrin, is increased, is purely symptomatic. Porphyria, in which large amounts of uroporphyrin also appear in the urine, is an abnormal production of pyrrole pigments. R. outlined the principal schemes of classification of the porphyrias, and discussed three types: porphyria congenita, which may occur in cattle; porphyria acuta; porphyria cutanea tarda. These are three separate diseases, although all are related to disturbances of pyrrole pigment metabolism. He proposed a schematic interpretation of metabolic disorders leading to porphyria.—W. R. BETT.

See also absts. **1869** (toxicity of sulphaquinoxaline for chickens); **2102-2103** (rat poisons); **2147-2148** (report, Australia).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

RADKEVICH, P. E. (1952). **[Treatment of animals by drugs according to Pavlov's theory.]**—*Veterinariya, Moscow.* **29,** No. 10. pp. 40-46. [In Russian.] **2066**

Although prophylaxis is the chief aim of Russian veterinary science, therapy receives much attention. According to Pavlov, of the five types of therapy, local, symptomatic, functional, causal and "pathogenetic", the last is the most important because it concerns the c.n.s. which regulates not only the normal physiological functions but also the defensive mechanism in all pathological processes. The idea is that it is chiefly the host, not the disease, that requires treatment. This is done by strengthening and stimulating the c.n.s. and locally the relevant nerve endings by neurotropic substances, in order that they may counteract the pathological processes. Bromine and caffeine particularly were found to act beneficially on the c.n.s. At the same time symptomatic, functional, causal and reconditioning drug treatment, as individually required, are necessary.
—F.A.A.

LE VANN, L. J. (1952). **The control of unpleasant odours in hospital wards.**—*Canad. med. Ass. J.* **67,** 58-59. **2067**

Sudroma, a chlorophyll derivative, was effective in reducing odours emanating from patients in the low-grade wards of a mental hospital when one tablet containing 100 mg. chlorophyll was given twice a day at 12-hourly intervals to each of the patients in one wing. On the second day there was marked improvement in the treated compared to the untreated wing of the hospital.—R. GWATKIN.

LI, C. H. (1952). **Recent studies on the problems involved in the preparation, properties and bioassay of adrenocorticotrophic hormone.**—*Acta endocr., Copenhagen.* **10,** 255-296. [In English.] **2068**

Adrenocorticotrophic hormone (A.C.T.H.) is a polypeptide stable to acid but not to oxidation, from which certain amino acids are missing; free amino groups are essential for the hormone activity. Different biological assay techniques yield discrepancies in results which suggest that more than one substance with hormone activity may be present in the purest products obtained. Partial hydrolysis enhances some aspects of activity and decreases others.
—R. MARSHALL.

ALBERT, A. (1952). **Ionization, pH and biological activity.** — *Pharmacol. Rev.* **4,** 136-167. **2069**

It is important that biologists should know the ionization constants of the substances which they are investigating, and, in any given experiment, whether the effect of a substance is due to its molecules or its ions. For the clarification of this second point the author proposes the combined use of two complementary tests. In the first the substance is studied at various pH values; in the second the pH is held constant at the optimal value for the organisms under study, while the substance is varied by appropriate substitutions, each variant being studied separately.—A.S.

GOULD, J. C., BOWIE, J. H. & CAMERON, J. D. S. (1953). **Dosage of antibiotics. Relation between the in-vitro and in-vivo concentrat-**

ions effective in urinary-tract infections.—*Lancet.* **264,** 361-364. 2070

Dosages of antibiotics based on the *in-vitro* sensitivity of the micro-organisms concerned were used with success. Such dosages are often less than normal and thus drug-fastness is less likely to develop.—JOHN SEAMER.

MARSHALL, E. K., JR. (1952). **The dosage schedule of chemotherapeutic agents.**—*Pharmacol. Rev.* **4,** 85-105. 2071

Route of administration, total dosage, duration of treatment and intervals between doses must be considered. Relatively infrequent higher doses may be as effective as frequent doses which maintain a level of drug in the blood. Drugs about which data are available are, arsenicals, sulphonamides, quinine and other anti-malarials and penicillin; only limited experimental results are available about newer antibiotics.—R. MARSHALL.

SILBERT, P. & KOSTNER, M. (1952). Olcutin. **[Olcutin, a preparation containing chlorophyll, used for wound treatment and diseases of the skin.]**—*Wien. tierärztl. Mschr.* **39,** 495-499. 2072

A clinical note on the use of a chlorophyll preparation in the treatment of wounds and certain skin diseases.—A.S.

BROCKLEHURST, J. C. (1953). **An assessment of chlorophyll as a deodorant.**—*Brit. med. J.* March 7th, 541-544. [Author's summary modified.] 2073

The exposure of small quantities of methylmercaptan gas, which is frequently found in the lower bowel, to water-soluble chlorophyll for up to three days did not remove the smell of the gas. Mixing water-soluble chlorophyll with various strong-smelling solutions did not remove the smell of the solutions even after one or more months of exposure.

Clinical trials were reported in which the smell of urine, faeces and sweat was not removed by administering large numbers of chlorophyll tablets.

See also absts. **1818** (penicillin treatment of fowl cholera); **1822** (streptomycin in *Bact. coli* mastitis); **1834** (chloramphenicol and para amino benzoic acid in brucellosis); **1846** (antibiotics); **1854** (effect of sulphonamides and antibiotics on *Bartonella bacilliformis*); **1860-1861** and **1863** (antrycide); **1862** (phenanthridinium); **1864** (pentamidine); **1869** (sulphaquinoxaline); **1871** (nivaquine); **1872** (penicillin in protozoan diseases); **1876** (aureomycin in toxoplasmosis); **1877** ("diasone", "avlosulfon" and "sulphetrone" in toxoplasmosis); **1917** (aureomycin in distemper); **1937** (antibacterial substances); **1938** (a phagicidal and viricidal compound from fruits of the Norway maple); **1961** (A.C.T.H. and cortisone); **1962** (cortisone); **1983** (lungworms); **1988** (nematodes); **2001-2005** (antibiotics as animal growth factors); **2102** (ANTU); **2128** (vitamin E treatment of sterile cows); **2152** (book, pharmacology).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

HORT, W. (1951). Morphologische und physiologische Untersuchungen an Ratten während eines Lauftrainings und nach dem Training. **[Morphological and physiological studies in rats during and after exercise.]**—*Virchows Arch.* **320,** 197-237. 2074

Young adult rats were first subjected to 50 consecutive days of severe exercise and then kept with no further opportunity for exertion. Observations were made on the pulse rate, while sample rats were examined P.M. at regular intervals throughout the experiment to study changes in the heart, liver, and limbs.

During training the weight of the heart increased by nearly 30%, and fibre counts on a given section of the left ventricle revealed an increase in the total number of fibres corresponding to the increase in wt.; the muculature of the limbs grew greatly in size, while it became impossible after some time to demonstrate glycogen in the liver. All of these adaptations disappeared, and the organs returned gradually to their normal state when the rats were no longer heavily exercised.—A.S.

GAMBLE, J. L. (1951). **Lane Medical Lectures. Companionship of water and electrolytes in the organization of body fluids.** pp. 90. California: Stanford University Press $2.50; London: Geoffrey Cumberlege, Oxford University Press. 20s. 2075

These lectures are not a review of existing knowledge in this wide field, but form a discussion on certain aspects of the physiology and pathology of the body fluids on the basis of current concept, using selected quantitative data taken from the literature. The lectures comprise:—(i) The chemical structure of the body fluids and the pathogenesis of acidosis and alkalosis; (ii) Water and electrolyte balance; (iii) Process of dehydration; and (iv) Parenteral-fluid therapy.—E. MARSH JONES.

KETY, S. S. (1951). **The theory and applications of the exchange of inert gas at the lungs and tissues.**—*Pharmacol. Rev.* **3,** 1-41. 2076

In physiology an inert gas is defined as one not metabolised, regardless of physiological effect. The factors of ventilation, circulation time, partition and diffusion coefficients were defined and given symbols. The theoretical equations derived by past workers were expressed in these symbols and the limitations of the equations discussed.

A brief summary was given of previous experimental data on inert gas exchange in the

body and in tissues. The application of these theories to the medical study of pulmonary ventilation, cardiac output and circulation time was given. It was emphasized that insufficient data have been collected to support any one equation derived from theory.—A. SEAMAN.

HUGO, W. J. (1952). **Proposed terminology for hair follicles of cattle.**—*Fmg in S. Afr.* 27, 493-496. 2077

In sheep, hair follicles are divisible histologically into "primary", and "secondary". In cattle, variation is in size only, and H. suggested that the terms "micro" and "macro" follicle be used, the dividing line being arbitrary.

—C. C. BANNATYNE.

FOLLEY, S. J. & YOUNG, F. G. (1947). **The galactopoietic action of anterior-pituitary extracts in milking cows.**—*Proc. XIth Int. Congr. Chem.* London, 1947. 3 pp. [No pagination.] (N.I.R.D. No. 949.) 2078

The inj. of unfractionated ox ant. pituitary extract stimulates the further secretion of milk in declining lactation. The effect is not due to prolactin alone but probably to a hormone complex composed of prolactin, A.C.T.H. and other pituitary hormones.

—J. A. NICHOLSON.

NEWSHOLME, G. A. (1952). **Measurement of iodide-concentrating power as a test of thyroid function.** — *Lancet.* 263, 805-808. [Author's summary modified.] 2079

The uptake of an oral dose of radio-active iodine by the thyroid gland was measured in 32 people after a dose of 400 mg. of methylthiouracil. To a further 54 people the radio-iodine as given i/v together with 10 mg. of sodium iodide. Using either method the radio-iodine was accumulated mainly in the form of iodide and was not fixed by the gland. The two methods appear to give equiv. results, but the second is more rapidly completed, the concentration of radio-iodine by the thyroid gland reaching a maximum within 20 min. of an i/v inj. The ratio of the counting rate over the neck to that registered over the thigh was used as an index of the iodide-concentrating power of the thyroid. By using this ratio it was possible to make a definite diagnosis in 38 out of 46 cases referred for diagnostic testing.

This test is rapidly completed, is unlikely to be affected by variation in dietary iodine, and subjects the thyroid gland to less radiation than do methods using "unblocked" uptake.

PALMER, J. G., CARTWRIGHT, G. E. & WINTROBE, M. M. (1952). **Experimental production of leukopenia in rats by thyroid feeding.**—*Amer. J. Physiol.* 171, 385-390. [Authors' summary modified.] 2080

Rats fed desiccated thyroid and a diet limited in calorific value developed severe leucopenia and lost weight. The leucopenia involved both granulocytes and mononuclear cells and was not accompanied by anaemia. It was not corrected by increasing any one of the constituents of the diet nor by giving vitamin B_{12}, folic acid citrovorum factor, ascorbic acid, lyxoflavin, whole liver powder, vegetable fat or yeast. Evidence was presented which suggests that leucopenia is related to a limited calorific intake.

ANON. (1952). **The estimation of haemoglobin. Collected reports on work initiated by a special Sub-committee set up by the Medical Research Council during the War of 1939-45.** pp. 103. London: Medical Research Council. 2081

The monograph contains eight papers dealing with such questions as the reliability of different methods and instruments for Hb. determinations, tests with the M.R.C. grey wedge photometer, optical data for Hb. determinations etc. From a combination of methods, the N.P.L. haemoglobin standard was determined as 14·8 g. Hb. per 100 ml.

—J. A. NICHOLSON.

BLINCOE, C. & BRODY, S. (1951). **Environmental physiology with special reference to domestic animals. XVII. The influence of temperature on blood composition of cattle.** —*Res. Bull. Mo. agric. Exp. Sta.* No. 488. pp. 44. 2082

No change in the composition of cows' blood was observed when the environmental temp. was varied between 0° and 65°F. On raising the temp. to 100°F. the blood creatinine level was increased by over 100% and the carbon dioxide combining capacity, ascorbic acid level and cholesterol level were reduced to less than half their values at 50°F. No disturbance in water, electrolyte or colloid conc. was noted. The effects can be referred to the refusal of food and the reaction of the pituitary-adrenal system to heat and hunger stress.

—J. A. NICHOLSON.

BIGGS, R., DOUGLAS, A. S. & MACFARLANE, R. G. (1953). **The formation of thromboplastin in human blood.**—*J. Physiol.* 119, 89-101. [Authors' summary modified.] 2083

The long clotting time of normal human blood is usually thought to be due to the feeble nature of the blood thromboplastin. It can however be shown that the blood thromboplastin

is not feeble but that it exists in a precursor form. The long time taken is a measure of the delay in thromboplastin formation and not of the strength of the thromboplastin when formed. The factors necessary for thromboplastin formation are platelets, the antihaemophilic globulin, a serum fraction containing factor VII, and CaCl2. When these factors are all present a thromboplastin is formed capable of clotting normal plasma in from 8 to 12 sec.

The amount of thromboplastin produced is quantitatively related to the number of platelets available and, less critically, to the concentration of antihaemophilic globulin and factor VII. The time which elapses before thromboplastin formation begins to appear is most closely controlled by the concentration of antihaemophilic globulin and is scarcely affected by changes in platelet numbers over a certain minimum.

The presence of thrombin accelerates the formation of blood thromboplastin. The concentration of blood thromboplastin has a marked effect on the speed of thrombin formation from factor V and prothrombin.

ANDREWS, W. H. HORNER, MAEGRAITH, B. G. & WENYON, C. E. M. (1949). **Micro-anatomy of the hepatic circulation.** [Correspondence.] —*Nature, Lond.* **164**, 1011-1012. 2084

The branches of the portal vein and hepatic artery form large periportal sinusoids from which radiate the smaller sinusoids of the lobules. At the hilus this plexus of large sinusoids spreads out under the capsule of the organ receiving a richer arterial supply than in the depths. A loose venous and arterial plexus lies in the larger portal spaces and in the hilar region sending branches to the periportal network. No anastomoses between veins of different portal tracts were seen within the liver other than by way of the sinusoids. The arterial tree gives off many branches which enter the sinusoids *via* the periportal network. Some supply the portal vein, others anastomose with those of other portal tracts. In the species studied (man, dog, cat, rabbit and g. pig) there is a peribiliary arterial plexus which drains into the portal venous system by small direct vessels and by branches from the vessels supplying the periportal sinusoids. The terminal branches of both hepatic artery and portal vein enter large sinusoids which subdivide. The portal, venous and arterial hepatic circulations have no apparent connexion with the hepatic venous circulation except *via* sinusoids into the centrolobular veins.—L. M. MARKSON.

ANDREWS, W. H. HORNER & MAEGRAITH, B. G (1953). **Anatomical and physiological evidence of anastomosis of the hepatic artery and hepatic vein within the mammalian liver.** [Correspondence.]—*Nature, Lond.* **171**, 222-223. 2085

The authors described a technique for demonstrating trans-lobular arterial vessels in the liver. The majority of the vessels run into the base of small sublobular veins. They appear to be arterioles.—J. A. NICHOLSON.

WERNER, A. Y. & HORVATH, S. M. (1952). **Measurement of hepatic blood flow in the dog by the bromsulphalein method.**—*J. clin. Invest.* **31**, 433-439. [Authors' summary modified.] 2086

The estimated hepatic blood flow (E.H.B.F.) was determined in 49 observations on 17 anaesthetized dogs by the bromsulphalein (BSP) extraction method using hepatic vein catheterization. The mean E.H.B.F. was found to be 42 ml./kg./min., standard error 2·9. This is equiv. to 690 ml./dog/min., 1,140 ml./M^2/min., or 140 ml./100 g. liver/min. These figures are too high apparently owing to extrahepatic loss of BSP.

Deviations in hepatic flow determined from different sampling sites in the liver do not appear to exceed changes in hepatic flow from animal to animal or in the same animal on different occasions.

Differences in peripheral BSP concentration or differences in rates and concentrations of BSP infusion cause no significant difference in hepatic blood flow determinations. Hepatic blood flow is subject to wide spontaneous variation. A single observation represents only the blood flow under conditions during that period of observation.

HARKNESS, R. D. (1952). **Collagen in regenerating liver of the rat.**—*J. Physiol.* **117**, 257-266. 2087

Liver collagen estimations were made at varying periods after partial hepatectomy in the rat. The formation of new collagen was found to lag considerably behind the formation of new parenchymal tissue.—J. A. NICHOLSON.

FRÖHLICH, F. (1949). Die "Helle Zelle" der Bronchialschleimhaut und ihre Beziehungen zum Problem der Chemoreceptoren. [**So-called "bright cells" of the bronchial mucous membrane and the problem of chemoreceptors.**]—*Frankfurt Z. Path.* **60**, 517-559. 2088

The "bright cells" of human and animal bronchial mucous membranes are comparable with those of other epithelial mucous mem-

branes. Classified histologically among the interstitial cells, they are connected with afferent nerve fibres and are thought to be sensitive to chemical stimuli. They are believed to produce acetylcholine, not by endocrine action, but by liberating the substance as a result of chemical action on their surroundings.

—H. Behrens.

Dougherty, T. F. (1952). **Effect of hormones on lymphatic tissue.**—*Physiol. Rev.* **32,** 379-401. **2089**

A review of the influence of hormones on the involution and growth of lymphatic tissue indicates that gonadal and adrenocortical hormones, especially the latter, exert a constant moderating influence on the growth of lymphatic tissue. Their enhanced endogenous secretion or administration produces acute involution by direct lymphocytic action and by inhibition of heteroplastic and homoplastic lymphocytopoiesis. Their absence allows but does not in itself lead to proliferation of lymphocytes. A stimulating influence is exerted by the thyroid hormone and to a much lesser degree by the growth hormone of the pituitary, but their excessive secretion does not result in an increase in lymphatic tissue unless moderating influences are simultaneously diminished.—A. Ackroyd.

Christian, J. J. (1952). **The relation of adrenal weight to body weight in mammals.**—*Science.* **117,** 78-80. **2090**

Data collected from a number of different species show clearly that the adrenal wt. is a logarithmic rather than a linear function of the body wt. The adrenal glands of the mature female are relatively heavier than those of the mature male but are approx. the same wt. in immature animals of both sexes.

—J. A. Nicholson.

Folley, S. J. (1952). **Enzymic and metabolic aspects of hormonal stimulation of the mammary gland.**—*Proc. 2nd Int. Congr. Biochem.*, 1952. **4,** 5-19. (N.I.R.D. Paper No. 1354.) **2091**

Respiratory measurements point to the relative metabolic quiescence of mammary tissue during pregnancy by contrast with the active respiration of lactation. In addition to prolactin, A.C.T.H. has some obligatory function in lactogenesis and it now seems certain that an ant. pituitary hormone complex is necessary to initiate lactation, as well as the integrity of the adrenal cortex. Purified prolactin appears to be devoid of galactopoietic activity in cows, but it influences the respiratory metabolism of rat mammary gland slices. Adrenal cortex hormones appear to control the rate of fatty acid synthesis by mammary tissue. In addition, growth hormone injections provoke a significant temporary increase in milk yield and insulin is also concerned, as it increases fatty acid synthesis. An antagonism seems to exist between insulin and cortisone since in the presence of the latter, the lipogenesis produced by insulin is diminished or abolished.—J. A. Nicholson.

Blegen, E. M., Haugen, H. N., Örning, K. & Aas, K. (1952). **Some problems related to the regulation of renal plasma flow.**—*Acta med. scand.* Suppl. No. 266. pp. 267-273. [In English.] **2092**

The flow of plasma through the kidneys remains constant, though the red cell/plasma volume ratio varies. The authors consider that the factor responsible for the variation should be sought in the haematocrit ratio, and that the mechanism depends rather on the viscosity of of the blood itself than on the friction in the renal vessels. A correlation must necessarily exist between renal blood flow and cardiac output for this special condition of varying volume ratio between red cells and plasma.—A.S.

Widdas, W. F. (1952). **Inability of diffusion to account for placental glucose transfer in the sheep and consideration of the kinetics of a possible carrier transfer.**—*J. Physiol.* **118,** 23-39. **2093**

Simple diffusion cannot account for quantitative and qualitative circumstances associated with placental glucose transfer in sheep. Evidence was presented to support the theory that the glucose is combined with another substance during its passage through the membrane, though simple diffusion and action of an enzyme may assist the process.—G. B. S. Heath.

Meister, W. (1951). **Changes in histological structure of the long bones of birds during the moult.**—*Anat. Rec.* **111,** 1-21. **2094**

During the moult cycle the Haversian systems of long bones undergo enlargement by erosion and resorption of bone substance. This osteoporosis is followed by the formation of new systems. It is suggested that the entire mineral metabolism of the body passes through the bones as this condition is also associated with egg-shell formation (and, incidentally, with antler formation in deer).—R. N. Smith.

Barisson Villares, J. & Berthet, L. A. (1951). Climatologia zootécnica. XI. Contribuição para o estudo do aparelho pilosebáceo-músculo-sudoríparo nos *Bos taurus* e *Bos indicus*. XII. Contribuição para o

estudio da estrutura da glândula sudorípara nos *Bos taurus* e *Bos indicus*. **[XI. The sweat glands of *Bos taurus* and *Bos indicus*. XII. The structure of the sweat glands in *Bos taurus* and *Bos indicus*.]**—*Bol. Industr. anim.* **12,** 3-20 & 21-44. [English summaries.] **2095**

A detailed histological study of the hair follicles and accessory structures of *Bos taurus, B. indicus* and cross-breds, illustrated with photomicrographs. The authors confirmed the findings of other workers that a sudoriferous gland is invariably situated internal to the sebaceous gland and discharges by its own duct into the follicle. The work was undertaken to ascertain why zebus are better adapted to hot climates than *Bos taurus,* but the only difference found was that in the latter the sudoriferous gland is more glomerulated and has a smaller diam. than in zebus; the authors did not consider that this difference was significant.

—R. MACGREGOR.

ANON. (1950). **Cold Spring Harbor Symposia on Quantitative Biology. Vol. XIV. Amino acids and proteins.** pp. xii + 217. Cold Spring Harbor, L.I., New York: The Biological Laboratory. $7.00. **2096**

Every year, under the auspices of the Long Island Biological Association, Cold Spring Harbor, a symposium is held on a selected biological topic, and the papers and discussions given at the 1949 meeting on the subject of Amino acids and proteins have been published in full in this volume. The author of each paper was a recognized authority on some particular aspect of the subject, and much of the information given consisted of unpublished original observations.

The field of protein biochemistry is an extremely wide one, and our knowledge of the subject has been greatly enriched and advanced through the numerous and varied techniques used by different schools of thought. Notable advances have been achieved by such widely differing techniques as X-ray analysis, electrophoresis - convection, isotopic studies and chromatography. Detailed studies of individual protein units such as insulin, gramicidin, liver proteins and malignant tissue proteins have thrown new light, not only on the specific proteins under investigation, but on the broader aspects of protein chemistry as a whole. The colloidal nature of most proteins in biological systems has proved a very fertile field of investigation for the physical chemist. In this volume of the papers given and discussed at the Symposium all these facets of the subject of proteins have been covered by authorities of world-wide eminence. It is perhaps unnecessary to cite in detail each contribution, but the reader interested in this specialized and profound subject will find the whole volume an invaluable storehouse of knowledge and observation.—A. EDEN.

HIPPAUF, E. (1951). Ultraschall. Eine Einführung. **[Ultrasonic waves.]** pp. 55. Vienna: Wilhelm Maudrich. DM. 8. **2097**

The commercially sponsored booklet states simply and clearly the principles of ultrasonics and some physical effects of ultrasonic waves. The application of these waves in human medicine is described, with illustrations, and a table lists assessments of the results of treatment of 32 diseases with an optimistic accuracy of decimals of percentages.—E.V.L.

See also abst. **2139** (thyroid function and reproduction).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

OLSEN, S. J. (1951). Undersøgelser over forholdet mellem børnemaelks indhold af coliforme bakterier og det totale kimindhold. **[The relation between the coliform bacterial content of certified milk and its total bacterial count.]**—*Maanedsskr. Dyrlaeg.* **62,** 177-215. [Abst. from English summary.] **2098**

The author reviewed total bacterial counts and tests for organisms of the *coli-aerogenes* group performed on certified milk in Copenhagen and Aarhus and described the scorecard system used by the Aarhus Food Control Board for evaluating the bacteriological quality of the milk. The degree of coliform infection was more liable to seasonal variation than was the total bacterial count.—W. R. BETT.

DE VLEESCHAUWER, A. & HENDRICKX, H. (1948). **[Composition of milk and butter from heifers treated with oestrogens.]**—*Meded. LandbHoogesch., Gent.* **13,** 129. [Abst. from abst. in *Lait.* **31,** 429-431. (1951).] **2099**

In 8 virgin heifers implanted with stilbene, total milk production (and possibly fat) was found to be related to the dose of stilbene implanted. Numerous chemical findings were reported including nitrogen, lactose and chlorides of milk and iodine number of butter. Occasional low densities in milk were related to low lactose values.—P. H. HERBERT.

DAVIS, C. L. & ANDERSON, W. A. (1951). **Post-mortem and laboratory diagnosis of bovine granulomas encountered in meat inspection with special reference to tuberculosis.**—*Proc. 55th Ann. Meet. U.S. live Stk sanit. Ass.* 282-285. 2100

The authors emphasized that inspection of meat by trained lay meat inspectors provides only part of the service required. Much of the material so inspected requires to be submitted to laboratory tests. In the absence of such specialized examination false diagnoses are made. They gave examples of the conditions diagnosed when submitted to laboratory testing and of the diagnoses made when dealt with by the lay inspectorate. The emphasis throughout was on TB.—R. MACGREGOR.

BYWATER, H. E. (1953). **The hygienic and economic utilization of offal and by-products of food animals.**—*J. R. sanit. Inst.* **73**, 33-45. 2101

Even in otherwise well run abattoirs there is considerable wastage of valuable material, and such by-products as are salved for human consumption may be so badly contaminated by careless methods that they should not appear on the market. Contamination of inedible material causes loss from putrefaction and also labour troubles in the factories that handle it. All these materials should be handled with as much care as the carcass meat. Other related matters were discussed.—R. MACGREGOR.

GAINES, T. B. & HAYES, W. J., JR. (1952). **Bait shyness to ANTU in wild Norway rats.**—*Publ. Hlth Rep., Wash.* **67**, 306-311. 2102

ANTU (alpha-naphthylthiourea) as a bait poison for Norway rats, has the disadvantage of producing bait-shyness even when a change in bait-base has been made. Under both lab. and stimulated field conditions this bait-shyness persisted for at least 4 months; no tests were made for longer periods. ANTU is a quick-acting rat poison, safe and effective, yielding an average efficiency of 85% in first baitings. Details were given of the manner in which the poison should be used.—B. G. CLARKE.

SMIT, J. D. (1952). **Preliminary report on the toxicity of retrorsine, isatidine and pteropherine on rats, with special reference to the influence of sex on susceptibility.**—*J. S. Afr. vet. med. Ass.* **23**, 94-102. [Abst. from author's summary.] 2103

Sex was found to influence the susceptibility of white rats to s/c inj. of retrorsine and isatidine (alkaloids of *Senecio* spp.), males being approx. 3 times more susceptible than females. Pteropherine (also an alkaloid of *Senecio* spp.) was slightly more toxic to females. Removal of the gonads in both sexes had little influence on the susceptibility to retrorsine. Implantation of testosterone into castrated females reduced their resistance to that of normal males and stilboestrol and oestradiol increased the resistance of castrated males to that of normal females.

FEDOTOV, A. I. (1952). **[The Luga inter-regional veterinary laboratory in the Leningrad province.]**—*Veterinariya, Moscow.* **29**, No. 7. pp. 7-10. [In Russian.] 2104

A description of the veterinary and educational work being done by the Luga lab., Leningrad province. In the area served by it the numbers of farm animals have been more than made up after the devastation caused by the second world war, and it was claimed that infectious diseases have been largely eradicated. —F.A.A.

ALEXANDER, R. A. (1952). **The functions of the Division of Veterinary Services.**—*Fmg. in S. Afr.* **27**, 415-416. 2105

A general account of the work of the Division of Veterinary Services of the Department of Agriculture, Union of South Africa, written to show what is done for the farmers. —D. S. RABAGLIATI.

ANON. (1952). **[Veterinary regulations in the U.S.S.R.]**—*Veterinariya, Moscow.* **29**, No. 1. pp. 3-7. [In Russian.] 2106

The original Russian Veterinary Codex, promulgated in 1923, was extended to become the Veterinary Regulations of 1937. In November 1951 a revised set was adopted, necessitated by the development of the veterinary services following the success claimed for the Three-Year Animal Husbandry Plan 1949-51 [see *V.B.* **20**, 3385-6] which had enabled the pre-war animal population to be largely exceeded, had expanded the industries dealing with animal produce and led to other developments.

In these regulations the greatest emphasis appears to be placed on general prevention of disease and of the spread of epidemics. The duties of the higher personnel are laid down. Inspection of animal produce and the insurance of farm animals are dealt with.

The execution of the measures devolves on the veterinary department of the Ministry of Agriculture in conjunction with the Ministry of Health and others when circumstances demand.

Their chief duties are to appoint personnel,

to supervise and co-ordinate veterinary education, research and conferences, to control the manufacture and distribution of biochemical products, and to examine reports. Veterinary science is regarded as an important feature in the U.S.S.R. national economy.—F.A.A.

See also absts. **1790-1791** (*Str. agalactiae* in milk); **1833** ("grade A" milk); **1892** (rabies in sewer rats); **2142** (disposal of infected carcasses).

REPRODUCTION AND REPRODUCTIVE DISORDERS

NAGLE, J. R. & THORNTON, I. M. (1952). **Some recent developments in artificial insemination.** [Preservation of semen at low temperatures.] —*Irish vet. J.* **6**, 562-564. 2107

A preliminary note. Glycerol (20% in citrate buffer solution) is added to buffered semen at 5°C. After 12 hours it is cooled to −79°C. Semen is liquefied and used as required. Pregnancies have been obtained.

—C. C. BANNATYNE.

CEMBROWICZ, H. J. (1952). **Sporadic and specific infections in artificial insemination practice.**—*Rep. IInd Int. Congr. Physiol. anim. Reprod., Copenhagen,* 1952. **2**, 121-127. [In English. French and German summaries. Abst. from author's summary.] 2108

The incidence of accidental infection of the genital organs due to A.I. was found to be one in every ten thousand inseminated cattle, including heifers and cows. The causative bacteria found in such cases were *C. pyogenes,* streptococci and staphylococci; and factors influencing infection appeared to be (a) insemination of animals not in oestrus, (b) damage to the cervix and uterine mucosa, (c) insemination of pregnant animals. Although the incidence is small, cases of this nature have an adverse influence on the interests of A.I. They have to be investigated by the centre's vet. staff as they may disclose widespread infections of a more specific nature.

In a bull infected with *Tr. foetus* used in A.I. the conception rate at 3 weeks was similar to that of other bulls at the Centre, but the conception rate at 3 months showed a decline of up to 21·4%, the usual decline figure being approx. 8%. Visible abortions and pyometra cases were almost negligible, whereas 25% of all animals inseminated returned to oestrus at irregular periods.

C. pointed out the inadequacy of a direct microscopic examination only of preputial washings of affected bulls.

POLGE, C. & ROWSON, L. E. A. (1952). **Long-term storage of bull semen frozen at very low temperatures (−79°C.).**—*Rep. IInd Int. Congr. Physiol. anim. Reprod., Copenhagen,* 1952. **3**, 90-98. [In English. French and German summaries. Abst. from authors' summary.] 2109

The authors described a technique for the preservation of bull semen by freezing in solid CO_2 at −79°C. The survival of the spermatozoa under these conditions is dependent upon the use of diluents containing glycerol. Optimal conditions for freezing are: (1) dilution of the semen at 5°C. with a citrate buffer containing glycerol to give a conc. of 10% glycerol in the semen; (2) equilibration of the semen and diluent for 12 to 20 hours at 5°C. before freezing; (3) cooling the semen slowly at a rate which should not exceed 2°C./min. between 5° and −15°C., although below −15°C. the rate may be quicker. Up to 80% of the spermatozoa may resume motility after freezing by this technique and thawing at 40°C.

In 21 cows inseminated with unfrozen semen containing glycerol a pregnancy rate of 76% was obtained. 38 cows inseminated with glycerol-treated semen, which had been frozen at −79°C., gave a pregnancy rate of 79%.

In preliminary experiments on long-term storage, pregnancies were obtained from semen kept frozen at −79°C. for 20 weeks.

The authors discussed the possibility of very prolonged storage of semen and its application to A.I.

HAFEZ, E. S. E. (1953). **Conception-rate and periodicity in the buffalo.**—*Emp. J. exp. Agric.* **21**, 15-21. [Author's summary modified.] 2110

Oestrous cycles and conception among buffalo cows were studied over 12 seasons. The percentages of conceptions requiring one, two, and three or more services were 55·63, 21·62, and 7·66 respectively. The average number of services per conception was $1{\cdot}46 \pm 0{\cdot}31$, and the average breeding efficiency for the whole season 85·80%. More services per conception were required for maiden heifers than for breeding cows. Conception-rate for one mating could not be predicted from the preceding one; nor could the lifetime average of daughters be forecast from that of their dams. Conception followed by embryonic mortality may sometimes confuse observations on conception and the oestrous cycles. Both environmental and genetic factors may play a part in conception.

Normal single cycles which occurred in

41% of the cases had an average of 21·14 ± 0·72 days. Double cycles (43·94 ± 0·94) occurred in 30% of the cases, whilst triple cycles (69·28 ± 1·02) occurred in 11%. "Silent heats" seemed to prolong the subsequent cycle-length.

CARMON, J. L. & GREEN, W. W. (1952). **Histological study of the development of the testis of the ram.**—*J. Anim. Sci.* **11,** 674-687. **2111**

Individuals from a group of 12 Hampshire ram lambs were castrated at 2-weekly intervals from 2–26 weeks of age. Seven Southdown rams were used to secure testicles for ages of 9–22 weeks. At the time of castration the body wt. and age of the ram were recorded in addition to the wt. and vol. of each testicle and each epididymis. The central portion of each testicle and epididymis was fixed in Bouin's fixative, sectioned at 5 μ and stained with Heidenhain's Iron Haematoxylin. The development of the testicle was evaluated by its wt. and vol., the diam. of its seminiferous tubules, and the number of each cell type per tubule. The diameters of 25 randomly chosen seminiferous tubules were measured and the cells counted.

Rams were fertile when they were 5½–6 months of age.

The diam. of seminiferous tubules increased in a curvilinear (quadratic) manner when compared with age, body wt. or testicular wt. Some differences between breeds were found in the rate of increase of the cellular types in relationship to age, body wt., and testicular wt.

LÖLIGER, H.-C. (1953). Beitrag zum Problem der Samenstauung bei Ziegenböcken. [**Swelling of the epididymis caused by congestion of semen, in male goats.**]—*Fortpfl. Bes. Haustiere.* **3,** 6-8 & 12-14. [Published in *Dtsch. tierärztl. Wschr.* **60,** Nos. 1/4 & 7/8.] **2112**

Examination of cases in which there was obstruction of the passage of semen in goats showed that degenerative changes were present throughout the testis and epididymis, the primary lesions being in the germinal epithelium and epithelium of the epididymis. Blockage was due to the fact that the spermatozoa became adherent to the wall of the epididymis and eventually caused complete obturation.

—J. A. NICHOLSON.

SJOLLEMA, P. (1952). Excentrische staartinplanting bij spermatozoiden van stieren. [**Excentric implantation of the tail in bull spermatozoa.**]—*Tijdschr. Diergeneesk.* 77, 909-911. [English, French and German summaries.] **2113**

The conception rate of 2 bulls with 10–40% of spermatozoa with excentric tails was good. This is contrary to the findings of STRIKWERDA [*V.B.* **21,** 3373].—C. A. VAN DORSSEN.

EDGAR, D. G. (1952). **Vaginal eversion in the pregnant ewe.**—*Vet. Rec.* **64,** 852-858. **2114**

The conditions under which vaginal eversion may occur in pregnant ewes were studied by means of a large survey during the years 1950 and 1951. Environmental factors appear to be important in causing the disease, but what these factors are has still to be discovered.

—G. B. S. HEATH.

AUSTIN, C. R. & BRADEN, A. W. H. (1952). **Passage of the sperm and the penetration of the egg in mammals.**—*Nature, Lond.* **170,** 919-921. **2115**

The authors discussed the recent work on the subject and concluded that the utero-tubal junction has an important influence on the number of spermatozoa reaching the fallopian tubes. Physiological conditioning of spermatozoa is necessary before they can penetrate the zona pellucida, whilst their passage through the cumulus oophorus is aided by enzyme action.

—J. M. SWANNEY.

DE NORDIS, S. (1952). Osservazioni sulla presenza e distribuzione delle fibre muscolari ed elastiche nell'ovaio degli animali domestici —considerazioni sul loro concorso nel maccanismo dell'ovisgravio. [**Muscle and elastic fibres in the ovary of domestic animals.**]—*Arch. Vet. Ital.* **3,** 1-12. [English, French, German and Spanish summaries. Abst. from summaries.] **2116**

The author reported the presence of muscle fibres in the stroma of the ovaries of the mare, cow, goat, bitch, g. pig and cat. They were also found in the hilus zone in the mare, cow and sow. Elastic fibres were present to a varying degree in the cortex and medulla. The probable role played by these fibres in the discharge of the ovum was discussed.—R. N. SMITH.

BRUS, D. (1952). **Biopsia uteri of cows.**—*Rep. IInd Int. Congr. Physiol. anim. Reprod., Copenhagen,* 1952. **2,** 175-187. [In English. French and German summaries.] **2117**

A successful technique for uterine biopsy has been developed, but a sufficient number of samples have not yet been examined to draw firm conclusions about this method as an aid to diagnosis of endometritis.—G. B. S. HEATH.

BYERS, J. H. (1952). **A dairy cattle pregnancy test.**—*J. Dairy Sci.* **35,** 499. [Only abst. given. Abst. modified.] **2118**

In the Oregon State College dairy herd,

136 cows were checked for pregnancy, using an oxidation-reduction indicator with urine. The test consisted of taking a 3-ml. sample of urine that had cooled to room temp. in approx. 30 min. and adding 0·6 ml. of sodium benzone-indophenol indicator. The tubes were inverted for mixing, allowed to stand for 30 sec. and then read. The mixture of urine and indicator gives a green colour. Pregnant cow's urine does not return to colourless in 10 min., while that of the non-pregnant cow returns to the original urine colour within 30 sec. The intensity of the colour varies with length of gestation, the greatest density being at approx. 60 and 210 days' gestation.

Of the 136 cows tested, 82 had a positive reaction; 75 of these cows were pronounced pregnant at 60- to 90-days gestation by rectal palpation. Two of 82 cows had retained corpus luteum, 5 had calved recently and continued to give positive reactions for three weeks *post-partum,* and 2 unbred yearlings gave positive reactions. Of the 54 cows having a negative reaction, 3 were pronounced pregnant on rectal palpation. Two cows known to have cystic ovaries were negative to the test. Taking all cows into consideration, 91·1% efficiency in predicting pregnancy was obtained.

Other oxidation-reduction indicators were used, but were not as efficient as the sodium benzone-indophenol.

Bromberg, Y. M., Brzezinski, A., Rozin, S. & Sulman, F. G. (1951). **Reliability** [in human beings] **of pregnancy tests with male batrachia and female rodents.**—*Acta endocrinol.* **7,** 31-41. [In English. Abst from authors' summary.] **2119**

The reliability [in human beings] of the male frog pregnancy test, using *Hyla arborea, Rana ridibunda,* and *Bufo viridis* as test animals was studied in 700 cases. In only 85% of those with a positive raction could the diagnosis be made by this test. In comparison, the accuracy of the Rat-Aschheim-Zondek test is 99%, the Friedman test 98·5%, the Mouse-Aschheim-Zondek test 98%.

The 15% failures described with the frog test consisted of false negatives encountered in cases with reduced gonadotrophin excretion. This result is due (1) to the rather specific nature of this test, and (2) to the large amount of chorionic gonadotrophin needed to elict a positive reaction in the male frog.

The minimal quantity of chorionic gonadotrophin required to elict a positive reaction is 1/3 I.U. in infantile female albino rats, 1 I.U. in infantile female albino mice and male hyla frogs, 2 I.U. in male *Rana* and *Bufo,* 5 I.U. in infantile or adult female rabbits.

Marden, W. G. R. (1952). **The hormone control of ovulation in the calf.**—*Rep. IInd Int. Congr. Physiol. anim. Reprod., Copenhagen,* 1952. **1,** 154-165. [In English. French and German summaries. Author's summary modified.] **2120**

Unlike most mammals the calf is capable of responding to pituitary injections almost from birth. Age has little effect on the ability of the follicles to develop during a series of F.S.H. injections, the follicular response generally being as good three weeks after birth as in calves 6–8 months old. In the calf ovulation can occur spontaneously or following F.S.H. treatment before the end of the first month of post-natal life. Ova obtained from such ovulations are capable of fertilisation though the percentage becoming fertilised is very low. This is thought to be due to faulty insemination rather than to faulty maturation of the ova. Though many follicles (10–60) can develop during a series of follicle stimulating hormone (F.S.H.) injections, superovulation cannot consistently be obtained either by the i/v injections of luteinizing hormone (L.H.) or the chorionic hormone of pregnancy urine (P.U.) or a combination of these two.

Superovulation can generally be obtained with the formation of many corpora lutea if F.S.H. treatment is repeated a second time after a period of luteal activity.

The inhibiting effect of a corpus luteum on ovulation in cattle can be overridden in the F.S.H. treated animal if suitable quantities of L.H. or P.U. are i/v injected when the newly formed follicles are approaching maturity.

Ovulation in the calf at all ages up to 8–9 months of age either in the presence or absence of luteal tissue, is unaccompanied by oestrus.

Hafez, E. S. E. (1952). **Studies on the breeding season and reproduction of the ewe. I. The breeding season in different environments. II. The breeding season in one locality. III. The breeding season and artificial light. IV. Studies on the reproduction of the ewe. V. Mating behaviour and pregnancy diagnosis.** —*J. agric. Sci.* **42,** 189-231 & 232-265. [Author's general summary modified.] **2121**

I-V. During the course of three breeding seasons, daily observations of oestrus were undertaken on the following groups of ewes, all of which were running with ochred rams:—120 ewes (pure bred and first-cross) of different breeds and ages, running with vasectomized rams under natural conditions; 28 grade Suffolk

ewes fed on a sub-maintenance diet; 18 grade Suffolk ewes running with a fertile ram; 20 ewes of several breeds exposed to artificial light.

The effects of heredity (breed and individual), environment (season, year and nutrition), age and artificial light on the breeding season and related phenomena were investigated. The results and conclusions were as follows:—

There are breed differences in the extent of the breeding season, cycle length, incidence of silent heat and duration of heat. The duration of the breeding season is related to the geographical origin (latitude and altitude) of the breed. The duration of the breeding season of the first-cross is intermediate between that of the two parents. Individual differences in the number of oestrus cycles per ewe per season were more marked in the mountain breeds.

Of the ewe lambs, 79% exhibited oestrus during the shortest days only of the first breeding season. Their breeding season is not spread evenly about the shortest day as it is with adults. The occurrence and length of the breeding season in ewe lambs is associated with early birth dates or with higher growth rates.

Significant differences exist between breeds in the age at first oestrus. Ewe lambs born early in the season showed their first oestrus at later age and heavier weight than those born late. Annual differences in the duration of the breeding season, cycle length, incidence of silent heat and occurrence of first oestrus were negligible.

Sub-maintenance diet had no effect on the onset of the breeding season, but it converted oestrus into silent heat. Conception occurred less frequently after periods of underfeeding. At high latitudes nutrition has only a minor effect on the breeding season of the ewe.

A constant high ratio of artificial darkness (8 hours light: 16 hours darkness) hastened the onset of the breeding season some 57 and 27 days in the two experimental groups. A constant high ratio of artificial light (16 hours light: 8 hours darkness) hastened the end of the breeding season some 104 days on an average (in one experimental group). There were breed differences in the latency of initiation and of cessation of the induced breeding season. In the induced breeding season cycles of ovulation preceded the first oestrus. Two thresholds of pituitary activity were suggested, one for the onset of ovulation, and the other for the manifestation of oestrus.

A high frequency of cycles outside the normal range (14–19 days) was observed in the mountain breeds and in ewe lambs. The shortest average cycle length coincided with the shortest days of the year. A high frequency of silent heats (during the breeding season) was observed in the mountain breeds, in ewe lambs and during the second half of the breeding season.

Oestrus was of longer duration in adults and yearlings than in ewe lambs.

Post-partum heat occurred in 56% of Suffolk ewes with an average lactation anoestrus of 35 days. There is a relationship between the early onset of the breeding season and the incidence of *post-partum* heat. Conception *post-partum* is partly inhibited by lactation.

Mating behaviour was observed in animals of several breeds and ages (three patterns were recorded for ewes and eight patterns for rams).

Irregular columnar cells in the vaginal smear of the ewe characterized late pregnancy.

In addition, the breeding season of wild and domestic sheep was reviewed in relation to the environment with special reference to the length of daylight.

PRADER, A. & SCHWEIZER, R. (1950). Serumeisen und Sexualhormone. Untersuchungen bei kastrierten und nichtkastrierten Pferden. **[Serum iron and sex hormones. Experiments on castrate and non-castrate horses.]**—*Experientia, Basle.* **6**, 351. **2122**

Serum-Fe in mares (223 μg.%) was significantly higher than in stallions (167 μg.%) or in geldings (105 μg.%). Data for serum-Fe directly before castration (176 μg.%) show a significant drop to 97 μg.%) within 6 weeks. Serum-Fe varies also with breed.

—K. J. SINCLAIR.

HAMMOND, J. (1952). **Nutrition and fertility.**—*Proc. VIth int. Congr. anim. Husb., Copenhagen,* 1952. **3**, 38-45. [In English. French, German and Danish summaries. Author's summary slightly modified.] **2123**

H. discussed the modes of action of the various factors in nutrition on fertility as to whether they act on the anterior pituitary, gonads or accessory organs.

The number of eggs which ripen in the ovaries depends on the plane of nutrition, a given quantity of follicle stimulating hormone stimulating more follicles if the plane is high, for in this case there are more follicles with an antrum. Failure to ripen follicles occurs under conditions of phosphate deficiency or in certain species during lactation. This may be due to an inhibition of anterior pituitary secretions.

The number of eggs shed which become fertilized is affected by the occurrence of "still heats" which result from low plane nutrition. Lack of energy nutrition decreases the output of testosterone and so sexual desire; this also

occurs in fat animals, probably because of the solubility of testosterone in fat. Sterility in males may be associated with liver lesions which can be caused by diets deficient in animal proteins.

The number of eggs fertilized which develop properly to produce viable young is reduced in poultry by lack of animal protein factor in the ration. In mammals it is possible that it may be caused by lack of phosphates or vitamin A, or by the presence of oestrogens in the feed. The plane of nutrition during late pregnancy affects the size and viability of the young at birth.

ASDELL, S. A. (1952). **A regional approach to problems of fertility and breeding efficiency in dairy cattle.**—*Rep. IInd Int. Congr. Physiol. anim. Reprod., Copenhagen,* 1952. **2,** 7-16. [In English. French and German summaries. Author's summary modified.] **2124**

In the northeastern United States and Ontario work on breeding difficulties in dairy cattle comes under the general supervision of a Technical Advisory Committee which arranges that the work shall be co-operative in nature. Results to date show that the problem is about equally divided between faults of management and disease. In the first class there is much to do in educating farmers so that they may reduce their losses. In the field of disease *V. fetus* infection seems to be the major trouble at present. Hormone therapy has not been very successful. The rate of spontaneous recovery amongst difficult breeders is high, and this must be taken into account in evaluating new drugs and treatments. Inheritance, for cows that eventually do breed, is not a major factor. Selection for fertility should not be attempted under present conditions. The repeatability of reproductive performance at one breeding cycle bears little relation to subsequent performance.

The author gave an outline of work in progress on the effects of nutrition upon fertility. Poor calfhood nutrition was followed by late puberty and difficulties in parturition, but it did not seem to affect ease of conception under the conditions of the experiment.

The nature of the steroid hormones found in the blood and urine of cows is being worked out; the author outlined the results obtained. These hormones are present in free and conjugated forms.

The time of ovulation can be brought under control. A small dose of progesterone given early in oestrus hastens ovulation while large doses delay it. Atropine delays ovulation owing to the blockage of the neurogenic factor in the liberation of luteinizing hormone.

STEWART, D. L. (1952). **The suppression of oestrus in dairy cattle after mating.**—*Vet. Rec.* **64,** 303-308. [Author's summary slightly modified.] **2125**

An investigation was made into the breeding efficiency of dairy cattle served either by natural mating or A.I. Approx. 18% returned to service within 28 days and approx. 25% after 28 days. This occurred when either method of mating was employed. This delay in returning or suppression of oestrus after an unsuccessful mating is an important and widespread factor in the problem of bovine fertility.

Clin. observations made on 110 cows showing suppression of oestrus revealed that in 61 cases there was persistence of the corpus luteum, in 31 suboestrus, and in 12 pregnancy, although diagnosed, was not maintained. The findings in the remainder were of no significance. The reason for the persistence of the corpus luteum was discussed briefly and it was concluded that early embryonic death is the explanation. If means could be found of reducing appreciably the embryonic death-rate, it should be possible to raise markedly the fertility level of cattle.

The possible aetiology of the condition was also discussed, but there is not sufficient information available at present to draw any conclusion.

LUNDGREN, B. (1952). **The subsequent fertility of cows inseminated by semen from low-fertile bulls.**—*Rep. IInd Int. Congr. Physiol. anim. Reprod., Copenhagen,* 1952. **3,** 175-182. [In English. French and German summaries. Abst. from author's summary.] **2126**

From material obtained from two A.I. associations L. showed that some bulls of low fertility influenced the subsequent fertility of inseminated cows. In one or two cases this was shown to be due to *V. fetus* infection and it was suggested that the other cases were caused by the same infection. The infection was introduced into one of the centres by purchase of 2 old bulls, which had previously been used for natural service. The infection spread to other bulls in the centre. The fertility of 2 bulls which had previously been high became permanently reduced, and the fertility of the cows inseminated with their semen was lowered. Two other bulls were presumed to have been temporarily affected.

The infection was introduced into another centre by the purchase of a young bull from an infected herd. The infection was then spread

to 3 other bulls belonging to the association. L. discussed possible routes of infection.

V. ENGELHARDT, B. (1952). Fertilitätsstörungen infolge von Missbildungen in den weiblichen Genitalien bei Färsen der Schwarzbunten Niederungsrasse (Friesisch-Holsteinische) in Schweden. **[Malformations of the genital organs of heifers causing infertility.]**—*Rep. IInd Int. Congr. Physiol. anim. Reprod., Copenhagen*, 1952. **2**, 48-55. [In German. English and French summaries. Abst. from English summary.] **2127**

In the course of four years' work with about 7,000 animals of the Swedish Lowland breed, the author observed certain malformations of the genital organs of heifers. These malformations have not only been a serious obstacle to A.I., but have necessitated the slaughter of affected heifers on account of sterility. In one big herd the author established malformation of the genital organs in the offspring of the bull D. Four other groups of heifers, sired by four different bulls, were available in the same herd as comparison material. It was found that on an average 9·4 inseminations were necessary to obtain 7 pregnancies in 18 heifers—all of them daughters of the bull D. The uteruses of the slaughtered heifers (11) were as far as possible pathologico-anatomically examined to establish the various kinds of deformities.

The author considers that it should be possible for A.I. centres, partly through clin. examination, partly through a centre for pathologico-anatomical examination of the organs, to arrive at a clear understanding of the distribution of malformations. In testing the fertility of bulls attention should also be paid to the reproductive activity of their daughters.

STAUB, C. (1951). Vitamin E-Behandlung der sogen. symptomlosen Sterilität des Rindes. **[Vitamin E in treatment of sterility in cows.]** —*Inaug. Diss., Zürich.* pp. 31. **2128**

Successful vitamin E treatment in 76 out of 98 sterile cows and 3 of 11 heifers, with otherwise normal physiological functions is claimed. —E.G.

POMEROY, R. W. (1952). **Prenatal mortality in an in-bred strain of Large White pigs.**—*Rep. IInd Int. Congr. Physiol. anim. Reprod., Copenhagen*, 1952. Addendum. pp. 5-11. [In English. French and German summaries. Author's summary copied *verbatim*.] **2129**

In 5 generations of inbreeding, the average litter size in a herd of Large White pigs fell from 9·9 in the foundation sow to 6·7. 45 sows were killed at various intervals after service; of these 16 were definitely pregnant and of the remaining 29, 19 had abnormalities of the genital tract.

Examination of the pregnant uteri indicated that the reduction in litter size was not primarily due to a reduction in the ovulation rate, but rather to either failure of all the ova shed to be fertilized or, more probably, death and resorption of embryos during the early stages of pregnancy.

Inbreeding in this herd has not reduced the ovulation rate but the increase in ovulation rate with litter order characteristic of outbred sows, does not occur.

Outcrossing with inbred boars on unrelated sows suggests that the high proportion of missing ova is not due simply to failure of fertilisation as a result of defective production of spermatozoa by the boars.

Outcrossing with outbred boars on the inbred sows suggests that the heavy prenatal mortality is characteristic of the inbred sows and not of the inbred embryos.

SAUNDERS, L. Z. (1952). **A check list of hereditary and familial diseases of the central nervous system in domestic animals.**—*Cornell Vet.* **42**, 592-600. **2130**

A tabulated check list giving a host list, the diseases concerned, and inheritance factors, together with 81 references.—M. L. CLARKE.

NACHTSHEIM, H. (1947). Erbliche Blutunterschiede zwischen Mutter und Frucht als Ursache von Erkrankungen und Tod des Kindes bei Mensch und Tier. **[Hereditary differences between the blood of mother and foetus as the cause of illness and death in children and young animals.]** — *Forsch. Fortschr. dtsch. Wiss.* **21-23**, 107-110. **2131**

A survey of foetal erythroblastosis: hydrops congenitus universalis, icterus gravis neonatorum and anaemia neonatorum. The first is the most fatal; 80% of children with the second die within the first few days; the mortality of the last is 12%. N. briefly reviewed the work of Landsteiner and Wiener on the Rh factor. Mothers of children with erythroblastosis are nearly always Rh negative, while the fathers are Rh positive. If the placenta is abnormally permeable towards the Rh antigens formed in the foetus and these reach the mother, they form Rh antibodies; if these antibodies reach the child, they cause haemolysis and foetal blood disease. Foetal blood disease in the rabbit was accidentally discovered by N. in 1938. Rabbits with hydrops congenitus universalis, like children with that disease, almost always die at birth. At autopsy the liver and spleen are found greatly enlarged. Experiments with anti-Rh sera to

find out if there is a factor in the rabbit corresponding to the Rh factor in man have been negative.—W. R. Bett.

Kasten, F. H. (1952). **Comparative histological studies of endocrine glands of yellow (*A^y a*) and non-agouti (*aa*) mice in relation to the problem of hereditary obesity.**—*Science*. **115**, 647-649. 2132

Sections of ovaries from obese, yellow (*A^y a*) mice reveal few, if any corpora lutea, a highly vascularized condition and the presence of darkly stained cells in the fat tissue surrounding the ovary.—C. W. Ottaway.

Schäper, W. (1949). Die Verbesserung der Konstitution unserer Haustiere. **[Improvement of constitution in domestic animals.]** pp. 57. Berlin & Hamburg: Paul Parey. DM. 3.-. 2133

This paper-bound booklet discusses briefly the causes of poor constitution in domestic animals, lethal factors and inherited predisposition to disease. It stresses the importance of planned selective breeding for improvement of general health, performance and exterior characteristics.—E.G.

O'Driscoll, J. G. (1952). **Some aspects of brood mare practice in Kentucky.**—*Irish vet. J.* **6**, 550-555. 2134

The value of prophylactic measures in ensuring a high conception rate is emphasised. Phenothiazine treatment is routine. Manual rupture of the hymen in maiden mares reduces the incidence of streptococcal infections in foals. In the autumn, barren mares are examined for genital infections, faulty conformation and *per rectum*. In cases of sub-oestrus and false heat, the true oestrous period is revealed by by-weekly speculum examination. Mating during the "foal heat" is avoided in the event of any post-foaling abnormality. "Spurious conception" can be differentiated from true pregnancy after the 45th day. The value of early pregnancy diagnosis is emphasized. Virus abortion is common.—C. C. Bannatyne.

Fine, N. C. & Winters, L. M. (1952). **Selection for fertility in two inbred lines of swine.**—*J. Anim. Sci.* **11**, 301-312. 2135

Using two lines of inbred sows, it was found that selection tended to slow down the normal decline from inbreeding, of numbers of piglets farrowed and numbers weaned.

The authors suggested that in selecting sows the size of the weaned litter and not the number born is the important factor.—J. M. Swanney.

Baker, L. N., Woehling, H. L., Casida, L. E. & Grummer, R. H. (1953). **Occurrence of estrus in sows following parturition.**—*J. Anim. Sci.* **12**, 33-38. [Abst. from authors' summary.] 2136

The occurrence and fertility of oestrus during the 21-day period following parturition were studied in 29 sows of which some suckled their piglets 2 days and were allowed to eat the afterbirth, while others had their piglets removed at birth and were not allowed to eat the afterbirth. None of the *post-partum* heats which occurred in 17 of the sows during the first 3 days after farrowing were fertile and probably none of the sows ovulated. Twenty-two exhibited heat between the 8th and 16th days and 21 ovulated, producing 197 ova of which 182 were fertilized at service. The data suggested that neither suckling nor *post-partum* heat had an over-all effect on the number of corpora lutea produced at the latter heats. However, 6 sows which neither suckled nor had *post-partum* heats had either inactive or cystic ovaries with few or no corpora lutea in 5 cases.

Rowlands, I. W. (1950). **Some observations on the breeding of dogs.**—*Proc. Soc. Study Fertil.* No. 2. pp. 40-55. [Abst. from author's summary.] 2137

R. recorded observations on the breeding behaviour of dogs (Airedales, Foxhounds, Airedale × Foxhound and mongrels) kept in a colony and fed on a standard daily ration of raw horse flesh, maize and vitamin and mineral supplements. Mean age at puberty of colony cross-bred bitches (14·5 months) was significantly less than that of pure-bred Airedales (20 months). Oestrous cycles occurred at an average interval of 7·7 months; they tended to occur more frequently in July and January. The periodicity of oestrus was not affected by the age of the bitch. Breed differences in the duration of vulval bleeding, pro-oestrus and oestrus were observed. A conception rate of 82% was recorded; it did not vary in succeeding cycles. The conception rate in bitches mated only once in a cycle was significantly less than that resulting from two or more matings. It was highest when mating occurred before the fifth day of oestrus. The chances of conception vary in relation to the length of oestrus. The conception rates of bitches mated with different dogs were uniformly high.

The gestation period tended to be shorter in the Airedale than in the Foxhound. In both, the period fell within normal (published) range. Litter-size (average = 7·5) was smaller in all types of bitches kept in the colony; it was not affected by the order of the cycles, season, or time of mating during oestrus.

The mortality amongst puppies was 38·5%,

4·7% were stillborn. 82% of post-natal deaths occurred within the first week of life. Intrinsic factors affecting the neo-natal mortality to some extent are (a) sex, (b) breed, (c) litter-size and (d) parity. Other possible factors considered were (a) environmental temperature at whelping, (b) inadequate nutrition during pregnancy, (c) infective agents and (d) whelping conditions. The mortality of puppies from bitches sired by different dogs was also studied.

HAMMOND, J., JR. (1952). **Control of reproductive and pelt changes in ferrets: some experiments with animals kept entirely upon artificial light.**—*J. agric. Sci.* **42,** 293-303. [Author's summary slightly modified.] **2138**

The effects, on induction and maintenance of oestrus and on pelt changes, were compared for various schedules of entirely artificial light of constant intensity. A period of exposure to low environmental temp. was without effect on subsequent response to light treatment.

In one experiment, after periods on 6 hr. artificial light or on daylight, groups were put upon, daily, (i) 7 hr. light as 6 hr. + 5 hr. dark + 1 hr. light, (ii) the same total amount of light but divided as 6 hr. + 1 hr. separated by darkness increasing by 5 min. each day, and (iii) light increasing from 7 hr. by 5 min. daily. Groups (ii) and (iii) came into oestrus together, later than group (i). Subsequently all were placed on 7 hr. total light daily, applied in various ways. If given as a single continuous period daily, oestrus ended and moult into winter coat occurred. The latent period depended upon the treatment previously imposed. The duration of oestrus on treatment (i) was greater than normal.

In another experiment females were put on, daily, (iv) 24 hr. light, (v) 14 hr. light, and (vi) 4 hr. light as 2 hr. + 10 hr. dark + 2 hr. light. First response was seen on (vi), but on the average the quickest was on (v) and slowest on (iv). Thus darkness contributes to the induction of oestrus.

Possible interpretations were discussed.

MAQSOOD, M. (1952). **Thyroid functions in relation to reproduction of mammals and birds.**—*Biol. Rev.* **27,** 281-319. **2139**

There is evidence that the feeding of thyroid materials to pullets may increase egg production, prevent seasonal decline and hasten moulting. In bulls, rams and boars it may cause precocious sexual development with increase of libido and improvement of the quality of the semen. Large doses beyond the physiological limits adversely affect normal development and function of the sex organs. The effects of administered thyroid depend on the rate of thyroxine secretion of the treated animal, and this may vary widely with the breed, sex and age of the animal as well as with various environmental factors such as length of daylight and temperature. Thyroid therapy under field conditions cannot be advocated until more is known about these factors.—N. DEAN.

BUTLER, L. (1952). **A study of size inheritance in the house mouse. II. Analysis of five preliminary crosses.**—*Canad. J. Zool.* **30,** 154-171. **2140**

B. dealt in detail with parental stocks, the criterion of body size, sex differences in wt., the effect of litter sequence and size on wt., adequacy of the scale used, and the 5 crosses.

—R. GWATKIN.

WILLIAMS, R. T. [Edited by.] (1951). **Biochemical Symposia No. 7. The biochemistry of fertilization and the gametes.** pp. 66. London: Cambridge University Press. 9s. 6d. **2141**

This symposium comprises six papers having a mean length of about 3,200 words, exclusive of the extensive reference lists, and in some cases short reports of the ensuing discussions. There are as many authors as papers. A brief introduction and summary are included. The first four papers deal, respectively, with:—Fertilization *in vitro* of the mammalian egg; Mammalian semen, composition, metabolism, and survival; Metabolism of the male accessory organs; Hyaluronidase and fertilization. These papers are of great veterinary importance and interest and should be read by all members of the profession, any part of whose work is concerned with animal breeding. The presentation is refreshingly scholarly, yet the language is surprisingly free from advanced technicalities, with the result that the papers are by no means difficult for readers whose biochemical knowledge was always limited and is now rusty.

—F. L. M. DAWSON.

See also absts. **1809** (saprophytic flora of the placenta of an aborting cow); **1960** (transplacental passage of antibodies); **2150** (report, Netherlands); **2153** (book, heredity and genetics); **2154** (book, embryology).

ZOOTECHNY

BOLIN, F. M. & EVELETH, D. F. (1951). **Proper disposal of diseased animal products. Progress report on BJO 61.**—*Bi-m. Bull. N. Dak. agric. Exp. Sta.* **13,** 241-244. **2142**

Attention is drawn to the fact that pasteurellosis may be spread to pigs and fowls through

the consumption of infected carcasses, and details are given of a simple form of pit burial. It is strongly recommended that every farm should be equipped with such a pit.

—ALASTAIR N. WORDEN.

KMENT, A. & HALAMA, A. (1952). Ergebnisse der hormonalen Kastration weiblicher Schweine mit Stilböstrolpräparaten. [**"Hormonal castration" of sows with stilboestrol.**] —*Wien. tierärztl. Mschr.* **39**, 521-526. [English, French and Italian summaries.] **2143**

A dose of 25 mg. per animal of a crystalline stilboestrol preparation injected s/c produced complete suppression of oestrus during a 4-month period in all of 88 female pigs.

—R. MARSHALL.

KOEGEL, A. (1951). Stellung der Tierpsychologie im Rahmen der vergleichenden Psychologie. [**Animal psychology and comparative psychology.**]—*Tierärztl. Umschau.* **6**, 244-246. **2144**

A brief review in which it was suggested that many of the recent advances in knowledge concerning animal behaviour may be of distinct value in the study of human psychology, and in which a plea was made for collaboration among animal psychologists in as objective an approach as possible to "parapsychological" problems.—ALASTAIR N. WORDEN.

See also absts. **2121** (breeding season in the ewe); **2145** (removal of vocal cords in fowls); **2155** (book, horse breeding).

TECHNIQUE AND APPARATUS

See absts. **1794** (cultivation of *B. anthracis*); **1800** (cultivation of *M. tuberculosis*); **1828** (cultivation of L forms of *S. typhimurium*); **1874** (Sabin-Feldman toxoplasmosis test); **1875** (cultivation of *Toxoplasma gondii* in the heart of rat embryos); **1883-1886** (F. & M. disease); **1945-1946** (differentiation of viruses by the fluorescence technique).

MISCELLANEOUS

DURANT, A. J. (1953). **Removing the vocal cords of fowl.**—*J. Amer. vet. med. Ass.* **122**, 14-17. **2145**

The anatomy of the syrinx in the hen, turkey, female duck and goose was briefly described and an operation for muting these birds was outlined.—F. T. W. JORDAN.

ZIRKLE, R. E. [Professor of Radiobiology, Institute of Radiobiology and Biophysics, University of Chicago.] [Edited by.] (1951). **Biological effects of external beta radiation.** pp. xxv+242. New York: Toronto: London: McGraw-Hill Book Company, Inc. 28s. **2146**

The work reported in this book was part of an intensive radiobiological programme carried out during the second world war at Clinton Laboratories, Tennessee. The isotopes used as a source of pure beta ray emission were prepared in the chain-reacting pile at Clinton.

The technique of external irradiation with beta rays, the methods of measurement of dosage, the biological, histopathological and physiological effects on experimental animals are all given in detail and results of experiments are shown both in tabular and graphical form in every chapter, each of which deals with a particular aspect of the work.

The book is excellently produced and contains a good bibliography and index, and adequate illustrations.—E.V.L.

REPORTS

AUSTRALIA. (1952). **Investigations into the etiology and control of enzootic (toxaemic) jaundice of sheep. Report of the Investigation Committee for the year, 1951/52.**—*Aust. vet. J.* **28**, 309-312. **2147**

Grazing of *Heliotropium europaeum* by sheep gives rise to liver damage which may kill a high proportion of the flock. While consumption of the plant may be insufficient to cause death it may enhance the susceptibility of the sheep to chronic copper poisoning. Other plants may have a similar effect.—D. C. BLOOD.

AUSTRALIA, QUEENSLAND. (1952). **Annual report of the Department of Agriculture and Stock for the year 1951-52.** [BELL, A. F.] pp. 125. Brisbane: A. H. Tucker, Govt. Printer. [Items of veterinary interest pp. 25, 71-72 & 74-107.] **2148**

Vaccination against BOVINE CONTAGIOUS PLEURO-PNEUMONIA is of considerable value but close supervision and attention to detail in the act of vaccination are essential to success. Intensive surveys and inspections and co-operation with slaughtering establishments are directed towards early detection of outbreaks.

The TB. control scheme was extended to include some 300,000 cattle with over 160,000 tests. Twenty-two practising vet. surgeons

carry out testing under the control of the Department of Agriculture and Stock. The incidence of the disease in cows supplying milk in south-eastern Queensland has been reduced from 12% in 1946-47 to less than 1% in 1951-52. Numerous pig heads were condemned for tubercle-like lesions in lymph nodes. The cause is obscure.

Serious outbreaks of BLACKLEG occurred in cattle with heavy losses, particularly in autumn and winter. Vaccines failed to prevent outbreaks. Later local strains were used to prepare new vaccine, but the general incidence was then too low to test its value.

Strain 19 vaccination by departmental officers and practising vet. surgeons was curtailed by seasonal conditions, but 20,000 calves were inoculated by the former. Porcine BRUCELLOSIS was not prevalent in Queensland.

VIBRIOSIS occurred among heifers which had been vaccinated with Strain 19 while BRUCELLOSIS occurred in non-vaccinated cows in the same herd. Mild METRITIS associated with *V. fetus* appeared to be responsible for prolonged sterility.

A brucella-like organism was isolated from EPIDIDYMITIS in rams which has been reproduced by inoculation.

Further cases of MELIOIDOSIS occurred in sheep and goats. Agglutination tests and melioidin reactions were used in an attempt to eradicate the disease from a herd of goats and the sheep at the research station at Oonoonba.

Some 23 outbreaks of SALMONELLOSIS occurred in chickens and ducklings, with 24% mortality. Chicks may carry salmonella when hatched but if well-fed and well-cared for losses are insignificant.

Serious outbreaks of TICK FEVER occurred in travelling cattle. Vaccination continues to provide protection. There have been a few sudden deaths following the use of a well-known specific drug. ANAPLASMOSIS occurred in a herd which had been vaccinated and it was thought that the donor animal had acquired the infection accidentally and passed it on to vaccinated cattle. TRICHOMONIASIS persisted in two cows and caused them to be infertile for 18 months.

CATTLE TICK (*Boophilus microplus*) INFESTATIONS were widespread and persisted in cattle in drought stricken regions of western Queensland. D.D.T. continues to give very effective control and with its help ticks were eradicated from one district and extension into "clean" areas was prevented. B.H.C. appeared less satisfactory, especially in heavy infestations. Tests of insecticides continued and chlordane, toxaphene and dieldrin gave good results when applied by power spraying. Toxaphene has been satisfactory in a dipping vat during a two-year period. Further trials of application of D.D.T.-B.H.C. mixtures by "fogging" gave results warranting further work. There was no evidence that strains of ticks resistant to the synthetic insecticides had developed. (More recently B.H.C.-resistance has appeared.) There were some deaths following dipping in B.H.C. but the predisposing causes are obscure. Most losses occurred during the hot, dry period of the year when cattle in poor condition were dipped during the heat of the day. Unusually heavy infestations with *Ixodes holocyclus* occurred in farm animals, mainly cattle and pigs, in which fatal cases of paralysis of as many as 20% of the herd were recorded. Extensions of *Siphona* (*Lyperosia*) *exigua* during the autumn of 1951 did not persist. D.D.T. continues to provide adequate control. *Damalinia ovis* extended further west during a good season.

Observations on seasonal fluctuations in helminth parasites of cattle continued. Conditions in the Darling Downs region did not favour *Haemonchus contortus, Bunostomum phlebotomum* or *Strongyloides papillosus,* all of which are abundant in nearby coastal regions. *Oesophagostomum* (*Bosicola*) *radiatum* was common in the Darling Down region.

"DROUGHT PARALYSIS", a syndrome including muscular incoordination, recumbency and eventually a type of paralysis, was seen in dairy cows forward in calf, during the drought which prevailed in coastal regions in the winter and spring of 1951. Treatment was generally unsuccessful but some cases responded to better nutrition and careful nursing.

COPPER DEFICIENCY associated with unthriftiness, scouring and death was identified in additional herds. Drenching with copper compounds provides a short period of protection because only 10% of the copper is retained. About 90% of injected copper is retained but most compounds are too irritant. URINARY CALCULI in sheep were associated with ingestion of herbage plants rich in oxalate and calcium and often in magnesium. When rams were confined in small pastures and fed supplements of grain and meal the occurrence of calculi (calcium and magnesium carbonates) may be due, not to the supplements, but to oxalate- and calcium-rich plants which may be abundant.

A number of cases of LEAD POISONING occurred in cattle, the source of the lead being paint or discarded wet-cell batteries. Cattle affected with mineral deficiencies are apt to lick paint from fences, gates etc., or discarded containers. NITRITE POISONING was seen in pigs. Some well-waters in Queensland are rich in

nitrates which may be a source of nitrites. PLANT POISONING was extensive and numerous species of plants were concerned. BIRDSVILLE DISEASE of horses, due to *Indigofera enneaphylla,* occurred in most western districts, and appeared in the north-west. TALLEBUDGERA HORSE DISEASE is confined to coastal regions and although feeding trials are negative *Eupatorium adenophorum* is suspect. Ingestion of *Crotalaria aridicola* and possibly other *Crotalaria* species caused extensive oesophageal and stomach ulceration in horses. The following plants were suspected of causing deaths in cattle:—*Cestrum parqui, C. nocturnum, Trema aspera, Hoya australis, Xanthium pungens* (seedlings), *Asclepias fruticosa, Castanospernum australe* (pods), *Terminalia oblongata, Sorghum sudanense* (prompt treatment with sodium thiosulphate was effective), *Nicotiana* spp., *Duranta repens, Myoporum acuminatum. Stachys arvensis* caused staggers in lambs, and pigs were poisoned by seedlings of *Xanthium pungens.* Oxalate-rich plants, *Trianthema portulacastrum* and *Portulaca oleracea* caused deaths of cattle and sheep. Feeding trials showed *Erythrophleum chlorostachys* to be toxic for horses, cattle and sheep. Trials with *Philydrum lanuginosum, Excoecaria dallachyana, Cycas media* and *Phaseolus lathyroides* (to pregnant cows) did not reveal toxic effects. Investigations on WALLUM DISEASE included feeding tests with *Macrozamia* spp. some of which produced the characteristic zamia palm poisoning syndrome, and one produced severe, fatal liver damage in cattle after ingestion of 3¾ lb. of material. Further work on GEORGINA RIVER DISEASE of sheep and cattle, while incriminating *Eremophila latrobei,* indicated that other plants may also be responsible.

Other conditions noted are SALT POISONING in poultry, BOTULISM in poultry (a mouse inoculation test with blood from affected birds was developed), vitamin-A survey in fowls, COBALT DEFICIENCY in sheep, neo-natal mortality in lambs, Mules operation for control of BLOWFLY STRIKE in sheep, MINERAL DEFICIENCIES in dairy cows and GLASSER'S DISEASE in pigs (sulphamethazine treatment was useful).

The directors of the sheep and wool branch, cattle husbandry branch, pig branch, poultry branch and dairy branch provide extensive material on feeding and management, analyses of subjects of enquiries and demonstrations in extenson work in sheep husbandry, sheep breeding, climatic factor in drought, drought feeding, investigation of "doggy" wool, and introduction of Santa Gertrudis cattle.

—H. McL. GORDON.

DENMARK. (1952). Årsberetning fra Veterinaerdirektoratet for året 1950. [**Annual report of the Director of Veterinary Services, Denmark (1950).**] [NIELSEN, F. W.] pp. 138. Copenhagen: J. H. Schultz A/S. [French summary.] **2149**

The scope of work and the organization of the Veterinary Service are described. The following numbers of outbreaks of the "malignant infectious diseases" occurred during 1950: —ANTHRAX 18, F. & M. DISEASE 8, FOOT ROT in sheep 1, EQUINE INFECTIOUS PARAPLEGIA 1, BOVINE ENZOOTIC MENINGITIS 3, EQUINE MANGE 1, EQUINE INFECTIOUS PNEUMONIA 1, and DISTEMPER in fur animals 6. The incidence of 20 "milder infectious diseases" is shown in a table for each of the 23 administrative districts. In addition several reports on various diseases by district veterinarians are given.

The poultry disease diagnostic work is summarized, also that for BRUCELLOSIS and TB., both of which were under control.

In an attempt to control ox warble flies 118 herds of cattle in Jutland were inspected and the larvae were found in 16% of them.

In a livestock census, 487,300 horses, 3 million cattle, 3¼ million pigs, 59,000 sheep and close on 24 million poultry were enumerated.

The usual information is given about meat and milk inspection and vet. control of livestock imported and exported.—J. EDWARDS.

HOLLAND. (1952). Jaarverslag 1951 van de centrale commissie von toezicht op de uitvoering van de kunstmatige inseminatie. [**The sixth annual report of the Dutch artificial insemination board.**] pp. 63. Utrecht: Secretariaat van de Centrale Cie K.I. [English, French and German summaries.] **2150**

Since the introduction of A.I. the total number of bulls in the Netherlands has decreased. The number of Herdbook bulls has not been influenced, it even increased from 2,161 in 1940 to 4,028 in 1951. This is of importance for the preservation of the breeds. All bulls used for A.I. are examined beforehand by the Animals Sanitary Boards. Bulls with deformities of the sexual organs are not used.

Results of A.I. were better in brucella-free herds than in herds giving positive reactions to the ring test. Low conception rates were seen in animals with abnormal oestrous cycles.

In 1951, of all female cattle of one year and over 26% (*i.e.* 30% of the cattle used for breeding purposes) were inseminated. 52·81% of the 566,604 animals served conceived to the first insemination, the actual pregnancies and not the non-returns being listed.

—C. A. VAN DORSSEN.

BOOK REVIEWS

VON BRAND, T. [Laboratory of Tropical Diseases, National Institutes of Health, U.S. Public Health Service, Betheseda, Md.] (1952). **Chemical physiology of endoparasitic animals.** pp. x + 339. New York: Academic Press Inc., $7.50. **2151**

A review of present knowledge of the chemical physiology of endoparasites. The object of the book is to facilitate the introduction of prospective parasitologists to the physiological side of the subject and to attract the chemical physiologist to problems in parasitology. The book deals firstly with the chemical composition of endoparasites and includes a chapter on the role of toxic substances. In the section on metabolism both inorganic and organic aspects are considered. The chemical relationship between host and parasite is covered, and there are sections on nutrition, metabolic disturbances, the physiological basis of chemotherapy and the problem of drug resistance. Comprehensive references are a feature of the book, and author and subject indexes are provided.

—S. F. M. DAVIES.

SALTER, W. T. [Professor of Pharmacology, Yale University School of Medicine.] (1952). **A textbook of pharmacology. Principles and application of pharmacology to the practice of medicine.** pp. xiii + 1240. Philadelphia & London: W. B. Saunders Company. 75s. **2152**

The author has compiled the valuable information contained in this book chiefly for the benefit of medical students and practitioners, the examples cited in evidence of fundamental statements being selected from material which has a clinical bearing. In treatment of the vast array of facts within the realms of pharmacology the medical pharmacology presented has been construed in terms of pathological physiology.

The book contains 56 chapters and is divided into four parts, each of parts two and three having sub-sections. Part I comprises General Principles of Pharmacology. Part II, Drug action on physiological mechanisms, is divided into six sections covering (i) The relief of pain and sensory disturbance; (ii) General anaesthesia; (iii) Convulsions and coma; (iv) Drugs acting on the circulation; (v) Endocrine and vitamin regulators and (vi) The autonomic nervous system. Part III, The application of drugs in clinical medicine, is divided into sections (vii) Drugs and body systems, (viii) Toxic substances of industrial and homely origin and (ix) Chemotherapeutic and chemoprophylactic agents. Part IV is devoted to Toxicology. There is a good index; the text is illustrated with numerous diagrams, tables and organic formulae; printing and paper are excellent and the volume is strongly bound.—E. MARSH JONES.

GOLDSCHMIDT, R. B. [University of California.] (1952). **Understanding heredity. An introduction to genetics.** pp. ix + 228. New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Ltd. 30s. **2153**

The distinguished author of this book has written a readable and fascinating account of genetics for the non-specialist. Genetics does not readily lend itself to easy writing and yet this book is popular and authoritative and will certainly satisfy the curious and provide them with an excellent introduction to the author's larger works. As he points out in his preface the contents of the book constitute a challenge to Lysenkoism. The reader proceeds by a series of conveniently placed stepping stones to the more advanced aspects of the subject.

There are twelve chapters: The hereditary and non-hereditary traits, the sex cells and fertilization, elementary mendelism, a further chapter on mendelism which includes considerations of the Roman square and alleles, chromosomes and mendelism, linkage, mutation, sex chromosomes and sex-linked inheritance, collaboration of genes, summation or multiple factors, multiple alleles and, finally, a "glimpse of more technical facts and problems of genetics". Interesting problems are appended which serve as tests of the reader's understanding of the material he has read in the preceding pages. "Understanding Heredity" is a welcome and much-needed addition to the literature of genetics.—C. HORTON SMITH.

DALCQ, A. (1952). Initiation à l'embryologie générale. **[Introduction to general embryology.]** pp. 122. Paris: Masson & Cie. Fr. 920. **2154**

In the first chapters the reasons for studying embryology are discussed, followed by a short description of the development and present methods of study of the science. The structure of the gametes is briefly reviewed and the development of the zygote is traced to the gastrula stage. The remaining half of the book is devoted to a discussion of recent advances in experimental embryology, concluded by a review of some of the problems yet to be solved, or of which the suggested solution is open to doubt.—R. N. SMITH.

ZORN, W. (1952). Pferdezucht. **[Horse breeding.]** pp. 322. Stuttgart z.Z. Ludwigsburg: Eugen Ulmer. 3rd Edit. DM. 12.60. 2155

An interesting account of the history of the horse, its origin and development into its present form, its utilization and management, the various breeds and varieties, breeding, feeding and housing, particularly in respect of German conditions. There are 62 good illustrations, mostly photographs. The book is paper-bound and well indexed.—E.G.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

ALBRITTON, E. C. (Edited by.) (1952). **Standard values in blood.** pp. x + 199. Philadelphia & London: W. B. Saunders Co. 22s. 6d.

BERGE, E. & SCHEBITZ, H. (Edited by.) (1952). Festschrift zum 90. Geburtstag des geheimen Medizinalrates Prof. Dr. scient. nat. et. Dr. med. Vet. et Dr. med. vet. h.c. Oskar Röder. **["Festschrift" commemorating the 90th birthday of Oskar Röder. Veterinary research.]** pp. 222. Leipzig: S. Hirzel. DM. 20. DM. 20.

BEST, C. H. & TAYLOR, N. B. (1953). **The living body.** pp. viii + 792. New York: Henry Holt & Co., Inc.; London: Chapman & Hall Ltd. 3rd Revised Edit. 37s. 6d.

BODANSKY, M. & BODANSKY, O. (1952). **Biochemistry of disease.** pp. xiii + 1208. New York & London: The Macmillan Co. 2nd Edit. $12.00 or 90s.

BRELAND, O. P. (1953). **Manual of comparative anatomy.** pp. xi + 256. New York, Toronto & London: McGraw-Hill Book Co., Inc. 2nd Edit. $4.50 or 36s.

BROWNING, E. (1953). **Toxicity of industrial organic solvents. (Revised in consultation with the Toxicology Committee).** pp. viii + 411. London: H.M. Stat. Off. Medical Research Council, Industrial Health Research Board. Rep. No. 80. (Revised Edit., 1952). 35s.

BURNS, M. (1953). **The genetics of the dog.** pp. viii + 122. Farnham Royal, Nr. Slough, Bucks: Commonwealth Agricultural Bureaux. Technical Communication No. 9 of the Commonwealth Bureau of Animal Breeding and Genetics, Edinburgh. 12s. 6d.

CAULLERY, M., CHATTON, E., DEFLANDRE, G., GRASSÉ, P.-P., HOLLANDE, A., LE CALVEZ, J., PAVILLARD, J., POISSON, R. & TRÉGOUBOFF, G. (1953). Traité de zoologie, anatomie, systématique, biologie. Tome I, fascicule II. Protozoaires: rhizopodes, actinopodes, sporozoaires, cnidosporidies. **[Treatise of zoology, anatomy, systematology and biology. Vol. I. Protozoa.]** pp. 1160. Paris: Masson & Cie. Fr. 9935.

COPE, V. Z. (1952). **What the general practitioner ought to know about human actinomycosis.** pp. xii + 80. London: William Heinemann Medical Books Ltd. 12s. 6d.

COPEMAN, W. S. C. (1953). **Cortisone and ACTH in clinical practice.** pp. xi + 255. London: Butterworth & Co. (Publishers) Ltd. 25s.

GOMORI, G. (1952). **Microscopic histochemistry.** pp. vi + 273. Chicago: The University of Chicago Press. $6.00 or 45s.

GRAY, P. (1953). **Handbook of basic microtechnique.** pp. viii + 141. London: Constable & Co. Ltd. 1st English Edit. 12s. 6d.

HADDOW, E. (Edited by.) (1953). **Hazards of atomic energy. Biological hazards of atomic energy.** pp. 235. Oxford: Geoffrey Cumberlege, Clarendon Press. 45s.

HAMBURGER, J. & MATHÉ, G. (1952). Physiologie normale et pathologique du métabolisme de l'eau. Déshydratations, oedèmes, déséquilibres hydriques. **[Water metabolism. Dehydration, oedema, and water disequilibrium.]** pp. 502. Paris: Éditions Médicales Flammarion.

HENDERSON, I. F. & HENDERSON, W. D. Revised by KENNETH, J. H. (1953). **A dictionary of scientific terms. Pronunciation, derivation, and definition of terms in biology, botany, anatomy, cytology, genetics, embryology.** pp. xvi + 506. Edinburgh & London: Oliver & Boyd. 5th Edit., revised and enlarged. 32s.

HOFFBAUER, F. W. (Edited by.) (1953). **Liver injury. Transactions of the eleventh Conference April 30th and May 1st, 1952, New York. [Sponsored by the Josiah Macy, Jr. Foundation.]** pp. 265. New York: Josiah Macy, Jr. Foundation. $4.00.

López y López, C. (1953). Enfermedades de las gallinas—conejos—pavos—patos—ocas—loros—canarios y pájaros. [**Diseases of rabbits, poultry and other birds.**] pp. xx + 499. Barcelona: Ediciones Gea. 3rd Edit. Pes. 120.

Miller, W. C. & West, G. P. (1953). **Black's veterinary dictionary.** pp. vii + 1120. London: Adam & Charles Black Ltd. 3rd Edit. revised throughout and entirely re-set. 50s. 6d.

Morton, L. T. (1952). **How to use a medical library. A guide for practitioners, research workers and students.** pp. vii + 44. London: William Heinemann Medical Books Ltd. 2nd Edit. 5s.

Needham, A. E. (1952). **Regeneration and wound-healing.** pp. viii + 152. London: Methuen & Co. Ltd. New York: John Wiley & Sons, Inc. 8s. 6d.

Newstead, R. (1924). **Guide to the study of tsetse-flies.** pp. xi + 333. Liverpool: The University Press, Ltd. London: Hodder & Stoughton Ltd. 20s. [Stocks are still available from the University Press of Liverpool Ltd., England.]

Paltrinieri, S. (1952). Aggiornamenti di malattie infettive. Dalle lezioni tenute nell'anno accademico 1951-52. Raccolte e curate dal Dott. Renato Farina. [**Lectures on infectious diseases; held during 1951-52 at the Veterinary Faculty of the University of Pisa. Collected by Farina, R.**] pp. 467. Pisa: Lit. D. Tacchi & Figlio.

Reyniers, J. A. (Edited by) (1948-49). **Lobund Reports. Germ-free life studies. Nos. 1 and 2.** pp. vi + 120 and vi + 162. Notre Dame, Indiana: The University Press. Price $1.50 and $1.75 respectively.

Roe, F. G. (1951). **The North American buffalo. A critical study of the species in its wild state.** pp. viii + 957. Toronto: University of Toronto Press. London: Oxford University Press. $12.00. 96s.

Röhrer, H. (1952). Auf dem Wege zur Verhütung der Maul- und Klauenseuche. [**Prevention of foot and mouth disease.**] pp. 16. Leipzig: S. Hirzel. DM. 1.50.

Simpson, G. G. (1951). **Horses. The story of the horse family in the modern world and through sixty million years of history.** pp. xvi + 247. New York: Oxford University Press Inc. 40s.

Stambul, J. (1952). **The mechanisms of disease. A study of the autonomic nervous system, the endocrine system, and the electrolytes in their relation to clinical medicine.** pp. xxxiii + 746. New York: Froben Press, Inc. $15.

Whatmough, A. (Revised by.) (1953). **Poisons guide. An encyclopaedia of poisons law. Vol. II. Poisons provisions and explanations.** pp. ix + 235. London: Chemist and Druggist. 40s.

Williams, R. T. (Organized and edited by) (1952). **Biochemical Society symposia No. 8. Metabolism and function in nervous tissue.** pp. 102. Cambridge: The University Press. 12s. 6d.

Wolf, G. (1952). **Chemical induction of cancer.** pp. xiii + 250. London: Cassell & Co. Ltd. 17s. 6d.

Yoffey, J. M. (Edited by.) **The suprarenal cortex. The Proceedings of the Fifth Colston Symposium held in the University of Bristol, 1952.** pp. ix + 232. London: Butterworths Scientific Publications. 42s.

Ziegler, M. (1953). Die Eutertuberkulose des Rindes. [**TB. of the udder in cattle.**] pp. 74. Leipzig: S. Hirzel. DM. 11.

Anon. (1953). **British pharmacopoeia 1953.** pp. xxiv + 894. London: The Pharmaceutical Press. 50s.

Anon. (1951). **Cold Spring Harbor Symposia on quantitative biology. Genes and mutations. Vol. XVI.** pp. xvi + 521. Cold Spring Harbor, New York: Long Island Biological Association. $9.

Anon. (1952). **International code of botanical nomenclature. Adopted by the Seventh International Botanical Congress, Stockholm, July 1950.** pp. 228. Waltham, Mass., U.S.A.: The Chronica Botanica. 30s.

Anon. (1953). **Electric fencing. Ministry of Agriculture Bulletin No. 147.** pp. iv + 30. London: H.M. Stat. Off. 2s. 6d.

Anon. (1953). **Overeating, overweight and obesity. Proceedings of the Nutrition Symposium held at the Harvard School of Public Health, Boston, Massachusetts, October 19, 1952.** pp. ii + 151. New York, N.Y.: The National Vitamin Foundation, Inc. Nutrition Symposium Series. No. 6. $1.50.

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DISEASES CAUSED BY BACTERIA AND FUNGI, 2156-2236.

Treatment of tick pyaemia of lambs with penicillin, **2156;** Bacteriophage typing of *Staph. aureus*, **2157;** Control of mastitis, **2158;** Aetiology and treatment of mastitis, **2159;** Biochemical characteristics in streptococci, **2160;** Hyaluronidase formation by streptococci, **2161;** Effect of penicillin upon bovine gangrenous mastitis, **2162;** Anthrax in livestock, **2163;** TB. in a horse, **2164;** TB. in a cow, with excretion of bacilli in the milk, **2165;** Control of TB., **2166;** Bovine type TB. in man and animals, **2167;** Tuberculin reactions in cattle free from lesions, **2168;** Healthy calves from cows with TB., **2169;** Effect of oestrogens on TB. in cattle, **2170;** Serological diagnosis of TB. in cattle, **2171;** Belgium: Law regarding the control of TB., **2172;** Superinfection in tuberculous animals treated with streptomycin, **2173;** Potassium iodide with streptomycin in treatment of TB., **2174;** Growth requirements of *M. tuberculosis* var. *bovis*, **2175;** Lipoids of tubercle bacilli, **2176;** Avian type O.T. and "synthetic" avian type tuberculin, **2177;** Tuberculin allergy and its passive transfer, **2178;** Investigation of antituberculous substances. An agar diffusion method, **2179;** Streptomycin-dependent mutants of a mycobacterium, **2180;** Repeated i/d johnin tests in Johne's disease, **2181;** Effect of isonicotinic acid hydrazide on *M. johnei*, **2182;** Effect of viomycin and other agents on *M. johnei*, **2183;** Tongue lesions in cattle caused by *C. pyogenes*, **2184;** The corynebacteria of milk, **2185;** Caseous lymphadenitis of sheep, **2186;** Treatment of glanders, **2187;** Mallein, **2188;** Differentiation of *Pf. whitmori* from *B. laterosporus*, **2189;** Broncho-pneumonia in pigs caused by *Pasteurella*, **2190;** Distribution of wild-rodent plague, **2191;** Acid prophylaxis and acid therapy of pasteurellosis, **2192;** Unreliability of agglutination test in swine erysipelas, **2193;** Immunizing antigens of *E. rhusiopathiae*. The role of the L-antigen, **2194;** Swine erysipelas vaccine, **2195;** Infectious kerato-conjunctivitis of cattle, **2196;** *Haemophilus bovis* and bovine keratitis, **2197;** Aureomycin for calf scours, **2198;** *Bact. coli* as a cause of agalactia in the sow, **2199;** *S. bareilly* in chicks, **2200;** Salmonella in man from eggs, **2201;** *S. typhi-murium* in duck eggs, **2202;** A preservative for milk infected with *S. typhi-murium*, **2203;** Diagnosing brucella infection in horses, **2204;** Bovine brucellosis with infection in the attendants, **2205;** Brucella following sexual stimulation and brucella exposure during early calfhood, **2206;** The preparation "ASD" in brucella in sheep, **2207;** Strain of *Br. abortus* isolated from cows immunized with Strain 19, **2208;** Immunogenicity of mucoid variants of *Br. abortus*, **2209;** Tests of Huddleson's M and Strain 19 vaccines, **2210;** Lyophilization of *Brucella* antigens, **2211;** Experimental transmission of brucellosis by insects, **2212;** Lesions caused in g. pigs by *Br. abortus*, *Br. suis* and *Br. melitensis*, **2213;** *Br. intermedia*, a new species, **2214;** Opsonins in brucellosis of g. pigs, **2215;** Phagocytosis. Blood opsonin for brucella, **2216;** Prophylaxis of brucella infection in France, **2217;** Bovine leptospirosis in Holland, **2218;** Bovine leptospirosis in Algeria, **2219;** Vaccination for bovine leptospirosis, **2220;** Canine leptospirosis, **2221;** Nutrition of *L. canicola*, **2222;** Gangrenous mastitis of sheep and goats, **2223;** Action of heat on *Cl. welchii* toxins, **2224;** Differentiation of the *Cl. welchii* group by the H.I. test, **2225;** Effects of *B. subtilis* on tetanus toxin and toxoid, **2226;** Treatment of tetanus by submeningeal administration of serum and anatoxin, **2227;** Vibrionic abortion in sheep. Culture of the organism, **2228;** Pathology of chick embryos inoculated with *V. fetus*, **2229;** Prevention of foot rot, **2230;** Chlamydospore production by *C. albicans*, **2231;** Epidemiology of *H. capsulatum* infection in breeding kennels, **2232;** Bacteriological studies of the X-irradiated dog, **2233;** Drug resistance in bacteria, **2234;** Bactericidal activity of an analogue of vitamin K, **2235;** Phagocytosis of capsulated bacteria, **2236.**

DISEASES CAUSED BY PROTOZOAN PARASITES, 2237-2249.

Effect of 4 new phenanthridine derivatives upon *T. vivax* in cattle, **2237;** Chagas' disease in dogs, **2238;** Cutaneous *Leishmania* infection in Argentina, **2239;** A.c.f. test for trichomoniasis, **2240;** Mucus-agglutination and trichomoniasis in cattle, **2241;** Multiplication of *Tr. foetus* outside its host, **2242;** A specific substance and a glycogen-like polysaccharide from *Tr. foetus*, **2243;** Ovine coccidiosis, **2244;** Life history of *Eimeria arloingi* in sheep, **2245;** *Pl. gallinaceum* in Indian fowls, **2246;** Blood protozoa of wild mammals in England, **2247;** Toxoplasmosis. Intra-uterine infection in dogs, premature birth and organisms in milk, **2248;** Toxoplasmosis in birds in Uruguay, **2249.**

DISEASES CAUSED BY VIRUSES AND RICKETTSIA, 2250-2300.

F. & M. disease. Lessons from a large epizootic, **2250;** F. & M. disease, **2251;** Technique of c.f. in F. & M. disease research, **2252;** Cultivation of F. & M. disease virus in new-born animals, **2253;** The preparation of F. & M. disease vaccine in Peru, **2254;** Chemical analysis of adsorbate vaccines against F. & M. disease, **2255;** Wild animals as a reservoir of rabies, **2256;** Rabies in cattle, **2257;** Electron microscopic study of the virus of rabies, **2258;** A rabies virus brain tissue neutralization test, **2259;** Effect of sodium monofluoracetate on the multiplication of influenza viruses, mumps virus, and pneumonia virus of mice, **2260;** Viability of the virus of swine pox, **2261;** Effects of fowl pox virus and methylcholanthrene in chickens, **2262;** Classification of myxoma and fibroma viruses, **2263;** Fibromas of squirrels related to Shope's rabbit fibroma, **2264;** Murray Valley encephalitis: complement fixation, **2265;** Electrophoretic study of the serum of

equine infectious anaemia, **2266;** C.f. reactions in equine virus abortion, **2267** & **2268;** Sporadic bovine encephalomyelitis, **2269;** Immunization against contagious pustular dermatitis of sheep, **2270;** Swine fever in wild pigs, **2271;** Pathology of swine fever, **2272;** Attempts to cultivate the swine fever virus on chick embryos, **2273;** Swine fever immunization using serum simultaneously with i/d crystal violet vaccine, **2274;** African swine fever, **2275;** The virus of Teschen disease, **2276;** Swine influenza (Shope), "Ferkelgrippe" and virus pneumonia of swine, **2277;** Enzootic pneumonia of pigs, **2278;** Agent of transmissible gastro-enteritis in swine, **2279;** The conglutination test in canine distemper, **2280;** Infection of the ferret with rabbit-passaged distemper virus, **2281;** Passage of the distemper virus in white mice and gerbils, **2282;** Incidence of distemper in canine encephalitis, **2283;** Serology in canine virus hepatitis, **2284;** Susceptibility of the rabbit to the virus of canine hepatitis, **2285;** Susceptibility of the ferret to canine hepatitis virus, **2286;** Feline pneumonitis. Effect of antibiotics on infection, **2287;** Diagnosis of N.D., **2288;** Haematology of N.D. of chickens, **2289;** Pathological studies on N.D., **2290;** Immunological and pathological findings on a strain of N.D.V., **2291;** Purification of N.D.V. by a thermodiffusion apparatus, **2292;** Goats used for the production of N.D. serum, **2293;** The titration of N.D. antiserum, **2294;** Immunization against N.D., **2295;** Q fever in Gt. Britain, **2296;** The epidemiology of Q fever **2297;** Interference phenomenon in animal infections with rickettsia, **2298;** On the nature of viruses and bacteria, **2299;** Viruses and miasmas, **2300**.

IMMUNITY, 2301-2304.

Transference of bacterial antibodies from the hen to the chick, **2301;** Response to immunization with combined prophylactics, **2302;** R.b.c. antigens in the fowl, **2303;** Haemolytic disease of foals, **2304**.

PARASITES IN RELATION TO DISEASE [GENERAL], 2305-2306.

Toluene against ascarids and bots in horses, **2305;** Feral pigs in the spread of disease in Venezuela, **2306**.

PARASITES IN RELATION TO DISEASE [ARTHROPODS], 2307-2315.

Synthetic insecticides in blowfly strike of sheep, **2307;** Biology and control of simuliids, **2308;** Significance of insecticide resistance, **2309;** The fox as a reservoir of *Linguatula serrata*, **2310;** Toxic effects of some trees on ticks and insects, **2311** & **2312;** *Demodex canis* infestation and its therapy, **2313;** The undescribed male and female of the pigeon quill mite, **2314;** Murine mange, **2315**.

PARASITES IN RELATION TO DISEASE [HELMINTHS], 2316-2330.

Intermediate hosts of flukes in animals in Italy, **2316;** The second intermediate host of *Dicrocoelium dendriticum*, **2317;** Trematodes in Alaskan Canidae, **2318;** Worm diseases of cattle, **2319;** Trichiniasis, **2320;** *Trichonema (Cyliocyclus) radiatum*, **2321;** Toxic effect of phenothiazine on cattle and its efficacy in removing *Ostertagia ostertagi* and *Trichostrongylus axei*, **2322;** *O. circumcincta* in the abomasal mucosa of the sheep, **2323;** *Protostrongylus* in goats, **2324;** Parasitic gastro-enteritis of cattle, **2325;** The effect of daily doses of phenothiazine on larvae of the gastro-intestinal parasites of cattle, **2326;** Volatile fatty acids of *A. lumbricoides*, **2327;** Influence of anthelmintics on the egg-laying capacity of pig ascarids, **2328;** Phenothiazine tolerance in pigs, **2329;** Cerebrospinal nematodiasis and "kumri" of horses in India, **2330**.

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS], 2331-2338.

Meningioma of the cerebellum of a dog, **2331;** Compounds tested for carcinogenic activity, **2332;** The transmissible venereal tumour of dogs, **2333;** Rabbit papillomas and the rabbit papilloma virus, **2334;** Fowl paralysis in Colombia, **2335;** Mortality in poultry, with special reference to leucosis, **2336;** Fowl lymphomatosis, **2337;** Treatment of lymphomatous diseases with triethylene melamine, **2338**.

NUTRITIONAL AND METABOLIC DISORDERS, 2339-2360.

The digestibility and rate of passage of foods during *l*-thyroxine administration, **2339;** Antibiotics in swine rations, **2340;** The intestinal microflora of g. pigs treated with antibiotics, **2341;** Water consumption and urinary calculi in steers, **2342;** Water requirements of rabbits, **2343;** Action of light on anaemia in rabbits fed on onions, **2344;** The effect of ingestion of urea on wool production, **2345;** Effect of cobalt in diet of the chick, **2346;** Haematological manifestations of copper deficiency in swine, **2347;** Metabolism of iron in copper-deficient swine, **2348;** Mobility of skeletal phosphorus in a cow, **2349;** Storage of elements in the skeleton, **2350;** Vitamin A deficiency in the chick. Skeletal growth and the c.n.s., **2351;** Feeding carrots and fertility of ewes, **2352;** Vitamin E deficiency in the lamb, **2353;** Vitamin B_1 deficiency in horses, **2354;** B vitamins in the nutrition of the pig, **2355;** The so-called southern wind disease, a phenomenon of deranged acclimatization, **2356;** Glycerol and propylene glycol treatment of ketosis in sheep, **2357;** Methods of treating acetonaemia in milch cows, **2358;** Puerperal paresis and eclampsia, **2359;** Influence of protein on the milk fever complex, **2360**.

DISEASES, GENERAL, 2361-2369.
The study of sheep diseases in Australia, 1900-1950, **2361**; Diseases of small animals communicable to man, **2362**; Fowl paralysis and mortality in fowls caused by *Dermanyssus gallinae*, **2363**; Physiology of the rumen as it pertains to bloat, **2364**; Bloat survey, **2365**; Husk: an atypical pneumonia, **2366**; Encephalomyelitis in camels, **2367**; Histochemical methods in the study of telangiectasis, **2368**; Disc degeneration in dogs, **2369**.

POISONS AND POISONING, 2370-2373.
Death from a detergent, **2370**; Deaths of cattle from rape-seed cake poisoning, **2371**; Effects of toxaphene on cows, **2372**; Poisoning of cattle with sugar-beet leaves sprayed with B.H.C., **2373**.

PHARMACOLOGY AND GENERAL THERAPEUTICS, 2374-2376.
(For treatment of specific infections see under the appropriate disease.)
Production and uses of radio-isotopes, **2374**; Antibiotic levels in blood and in milk following parenteral and intramammary inj., **2375**; Anti-foaming agents and their use in pulmonary oedema, **2376**.

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY, 2377-2392.
Pulse rate, respiration, and body temp. of buffaloes, **2377**; Influence of environmental temp. on hair and skin temp. of cattle, with notes on the thermal properties of hair and skin, **2378**; Oxytocin and adrenaline in milk ejection, **2379**; Influence of relaxin on mammary gland development, **2380**; Visible intra-epithelial iron in the mammary gland, **2381**; Release of antidiuretic hormone during suckling in dogs, **2382**; Lactation. Effect of gestation and of oestrus, **2383**; Glycogen in the cardiac conduction system of cattle, **2384**; The sinuses of the head of the ox, **2385**; I/v injected particulate material, **2386**; Secretion and function of gastric juice in the horse, **2387** & **2388**; Motility of the ruminant stomachs, **2389**; Effects of vagotomy and splanchnotomy on gastric motility in the sheep, **2390**; Autonomic innervation of udder, **2391**; Species differences in adrenocortical secretion, **2392**.

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION, 2393-2398.
Supervision of milk production, **2393**; Warfarin rat poison, **2394**; Rodenticide action of a derivative of hydroxycoumarin, **2395**; Carcass disposal, **2396**; Veterinary education in Queensland, **2397**; Veterinary education in Victoria, **2398**.

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ERRATA

V.B. **23**, abst. 1698. In title, for "*J. infect. Dis.*", please read "*Amer. J. Path*".

V.B. **23**, abst. 1826. In line 3 of title, for "panamo" read "panama".

V.B. **23**, abst. 1829. In line 2 of title, read "Giftigkeit" for "Giftgkeit".

List of Abbreviations

A.I. — artificial insemination
ant. — anterior
A.P.F. — animal protein factor
approx. — approximately
aq. — aqueous
av. — average

B.A.L. — British anti Lewisite (2,3 dimercaptopropanol)
b.p. — boiling point

c.f. — complement fixation
clin. — clinical
coeff. — coefficient
conc. — concentration
c.s.f. — cerebrospinal fluid

diam. — diameter
dil. — dilute(d)

E.I.A. — equine infectious anaemia
equiv. — equivalent

ft. — foot (feet) [measurement only]

Hb. — haemoglobin
H.I. — haemagglutination inhibition

inj. — injection(s)
insol. — insoluble
Inst. (inst) — Institute
i/m — intramuscular(ly)
i/p — intraperitoneal(ly)
i/v — intravenous(ly)
i/d — intradermal(ly)

lab. — laboratory (-ories)

max. — maximum (-al)

N.D.V. — Newcastle disease virus
N.D. — Newcastle disease

r.b.c. — red blood corpuscles
r.e.s. — reticuloendothelial system
R.H. — relative humidity

s/c — subcutaneous(ly)
soln. — solution
suppl. — supplement(s) (-ary)
std. — standard

temp. — temperature
therap. — therapeutic

U.V. — ultra-violet

vet. — veterinary
vol. — volume

w.b.c. — white blood corpuscles
wt. — weight

/ — per (*e.g.* wt./vol. m.g./lb. body wt.)

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